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ORIGINAL ARTICLES.

PERIMETRIC OBSERVATIONS ON THE INFLUENCE OF ESERINE AND IRIDECTOMY IN CHRONIC GLAUCOMA.

Read in the Section of Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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The best treatment for chronic glaucoma has often been discussed, but even at this time considerable difference of opinion exists in regard to the most satisfactory method, while the prognosis of the disease, depending as it does upon many factors, is always a doubtful quantity even after the most skilfully performed surgical interference. Most surgeons will, I think, subscribe to the doctrine of Dr. Bull, who says, "It seems to be our duty to operate in cases of chronic progressive glaucoma, and the earlier the better." It is presupposed that the patient has previously been warned of the nature of this disease to progress towards blindness and, as Priestley Smith has said, of the uncertainties which beset the operation. When a case of chronic glaucoma is under observation and the surgeon is weighing the chances for and against operation, it becomes necessary not merely to test the acuity of vision, but to have frequent information in regard to the field of vision, although, no doubt, it is perfectly true, as Dr. Bull further has said, that the condition of the field of vision is no constant guide either in forming a prognosis as to the progress of the disease or in deciding as to the time of operation. The picture of chronic glaucoma is a very familiar one, and we are all familiar with the so-called simple varieties of the disease in which the front of the eye exhibits practically no signs of disease, the anterior chamber may be of good depth and the iris prompt in its reactions to light and myotics, in which there is sometimes never any perceptible increase of tension, or this is only temporary in its character, but in which there is a shallow excavation of the disc, glaucomatous in its type, some decrease in vision, and contraction of the field. Since the days of Laqueur the use of myotics in the treatment of glaucoma has formed an important part of the treatment of the therapeutics of this disease, and there can be no question of the value of eserine and pilocarpine in acute and subacute forms of glaucoma, where for any reason it is necessary to delay operation, or where it may be wise to attempt a reduction of the tension before an operation is undertaken. It is very definitely ascertained that a myotic by contracting the pupil lowers the tension, if this be abnormally raised, and that by the same action the meshes of Fontana's space are widened, helping in the absorption of the fluid. It is, however, also ascertained that strong solutions of eserine, especially if frequently repeated, are likely to irritate the ciliary body and cause a spasm of accommodation; indeed iritis itself is known to follow the too vigorous application of a strong solution of a drug of this character. The employment of eserine or pilocarpine in chronic simple glaucoma, especially if there is no decided increase of tension, and if the anterior chamber is moderately deep, does not seem to present itself as favorably as in those instances, where there is a distinct rise of tension, narrowing of the anterior chamber, swelling forward of the lenticular system, and probable blocking of the filtration angle. Nevertheless it is a very universal custom to prescribe eserine or pilocarpine in such cases while the surgeon is watching the disease and making up his mind as to the propriety of operative interference. Perhaps sometimes he is induced to give this drug by the feeling that he has applied a salve to his conscience at the same time that he has ordered a drug which is set down as one of the methods of treatment in glaucoma, although he probably believes with Nettleship that eserine, except very rarely, cannot stop the progress of chronic glaucoma. The following cases are reported as examples of the value of this drug in the management of chronic glaucoma when operative interference was declined, and illustrate graphically the influence of the drug in widening and maintaining the field of vision, and also its occasional entire insufficiency to control the desire.

Case 1. Chronic Simple Glaucoma; No sub-

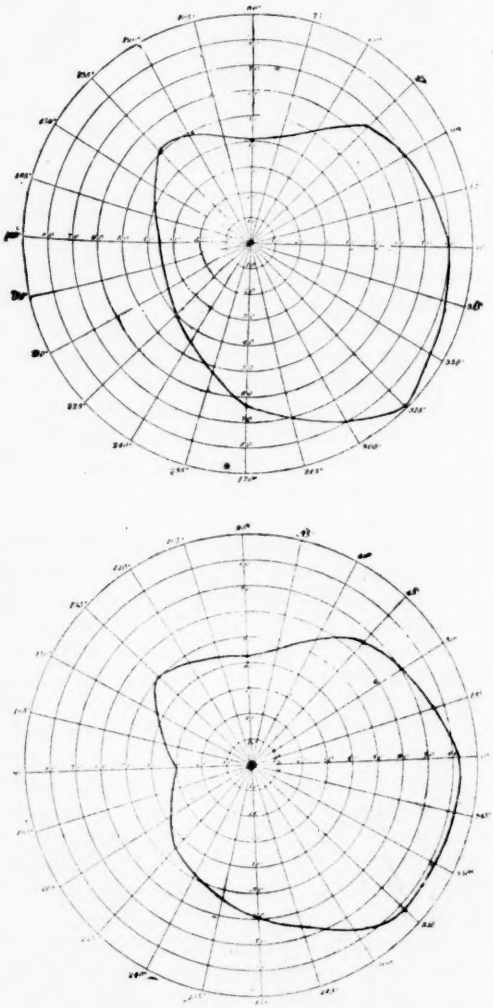
acute Attacks.—W. G. N., a man aged 72, an American by birth, applied for treatment November 11, 1890; has always been dyspeptic. He has had no recent severe illness except a pleurisy from which complete recovery has taken place. Some months ago his right eye appeared to him to be dim; he has never had any pain or any redness of the eye, "but thought his glasses were not right." In the right eye the pupil is prompt, the anterior chamber of moderate depth, the iris of good color, the cornea clear and not anæsthetic; the optic disc is a small, vertical oval with a deep cup (—2.D.) passing completely to the edge on the temporal side and nearly to the margin of the nasal half. The disc is surrounded by a semi-atropic crescent on the temporal side; there is a strong venous but no arterial pulse; T + ?; a few striæ in the anterior cortex of the lens. In the left eye, cornea, iris and pupil of the same character as just described; some striæ in the lens; an oval disc, rather gray but not cupped; there is a venous pulse. The field of vision of the right eye at this date is represented in diagram 1, namely, distinct contraction of about twenty-five degrees upon the nasal half, and a narrow rim of contraction above and in the upper temporal portion. The field of vision of the left eye was normal in all respects. The patient's refraction was as follows:

O. D. + 1. ⌒ + .50 axis V $\frac{20}{30}$. O. S. + 1. ⌒ + .75 axis H $\frac{20}{20}$.

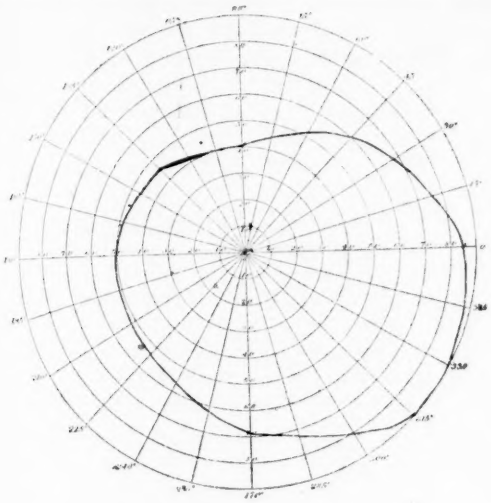
Eserine, gr. $\frac{1}{24}$ to the ounce was ordered three times a day. One week later the vision remained nearly the same ($\frac{20}{30}$ —) and the field of vision about the same with perhaps a slight increase of the contraction upon the nasal side. (Diagram 2). The strength of the eserine was now doubled, namely, $\frac{1}{12}$ of a grain to the ounce. One month later, December 10, 1890, the field presented the characters seen in diagram 3, namely, the same contraction above and to the upper temporal side but distinctly less contraction to the nasal side. There was no pain or discomfort, and the patient pursued his usual occupation, necessitating a deal of eye work.

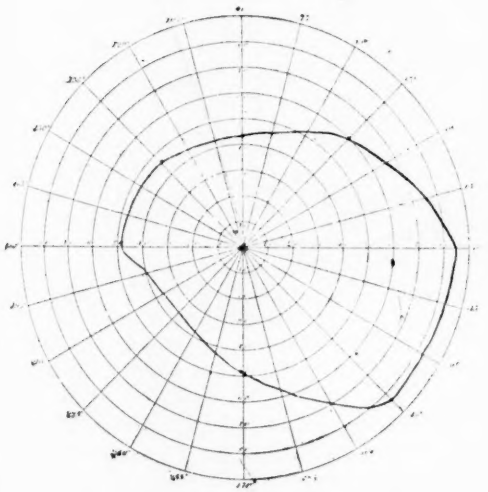
Again, about a month later, January 3, 1891, he reported, stating that for some days his eye had felt uncomfortable, not exactly a pain but a dull aching sensation with a curious feeling as if an insect was crawling back of it, and with increase in his dim vision. He had been somewhat irregular in the use of his eserine. The vision then was O. D. $\frac{20}{30}$, O. S. $\frac{20}{20}$, and the field of vision as seen in diagram 4, namely the same peripheral contraction above and to the upper temporal side with a contraction which now extended more decidedly below and in the lower and inner quadrant; the eserine of the same strength (gr. $\frac{1}{12}$ to the ounce) used frequently every three or four hours for a week, then gradually lessened to three times a day. In a week the field had returned to almost exactly the appearance it presented in diagram 3. The treatment was continued, the patient occasionally taking nux vomica and strychnia in addition, and on the 16th of March, or four months after he was first seen, the vision was $\frac{20}{30}$ as at the original visit, and the field presented the characters seen in diagram 5, namely, the peripheral contraction above and in the upper temporal portion having disappeared, and only a slight nasal contraction remaining. This character of field obtains at the present time. It may be stated that this patient was seen by Dr. Norris about six months before I examined him, and the same conditions were present which I had noted at his first visit. He was given eserine at that time and advised to use it, but he was not at all regular in its employment. We may hence say that for nearly a year this patient has used eserine off and on, and that for five months of that time he has instilled a so-

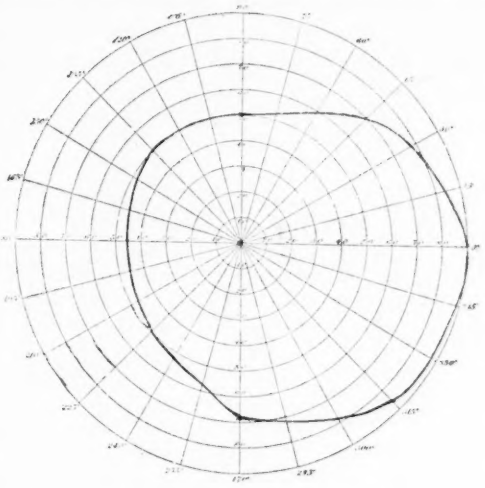
Adapted to the "M. B." Perimeter.



lution of the drug with pretty constant regularity. I would note as points of interest the gradual widening of the field of vision in all particulars in so much that there is complete restoration on the upper and temporal portions, and the only remaining portion of contraction being found upon the nasal side which, at its widest part, is about fifteen degrees. There has never been any subacute attack, although on one occasion a dull, aching pain was associated with a depreciation of central vision and an increase in the contraction of the visual field which again widened out under an increased frequency in the use of the drug until the favorable result noted graphically in diagram 5, was obtained and is maintained. If there is any favorable time for operation it certainly is present now. This has been advised and will be done provided consent is obtained. I would particularly point out that there has never been any increase in tension in this case; in fact, the tension has always been a doubtful + so that it seems to show that even in the absence of a decided elevation of intraocular tension eserine has some power in improving the nutrition of the eye and causing a restoration in a contracted field. The slight tonic doses of strychnia and nux vomica, which this patient took from time to time, can scarcely be accountable for the favorable result, although I am convinced that the acuracy of the statement of Dr. Henry D. Noyes, that strychnia in high doses produces temporary improvement in vision, perhaps in those cases especially which as he says border closely upon simple atrophy of the nerve.





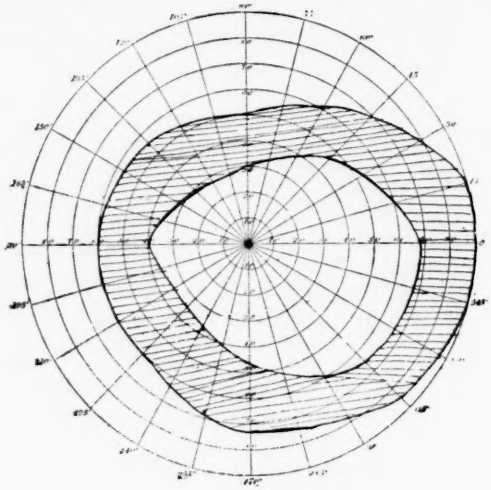


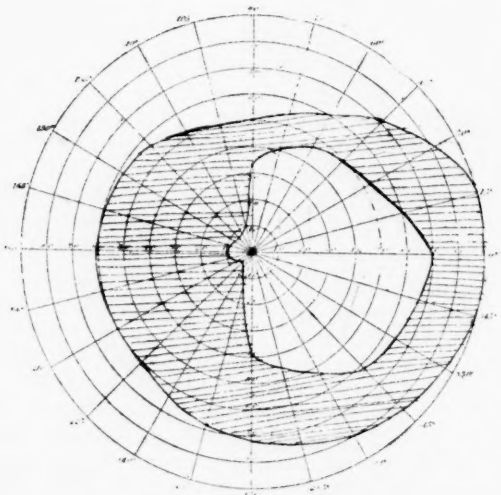
2. Chronic Glaucoma; Numerous Subacute Attacks Occurring during the course of the Disease, with Diagrams of the Fields of Vision Illustrating the Effect of Eserine in Controlling these Exacerbations.—Mrs. E., aged 50, an American by birth, came for treatment in September, 1888, complaining simply of dimness of vision in the right eye and inability to procure suitable glasses; headache and pain of any type was denied; the general health was perfect. The vision of the right eye was $\frac{15}{40}$; of the left $\frac{15}{30}$. In the right eye the cornea was slightly anæsthetic, the anterior chamber shallow, the disc round, excavated to its edges, especially deep above with an overhanging margin, beyond which and to the nasal side the papilla was surrounded by a buff-colored rim, in its turn encircled by a broad, halo-like band; T + 2; the iris was not atropic. In the left eye the anterior chamber was shallow, but no anæsthesia of the cornea; the disc oval, gray-red; a small, rather sharp, central excavation, not shelving; the veins full but not pulsating. The following results were procured by correction:

O. D. + 2.s ⊂ + .65c axis $15\frac{15}{20}$. O. S. + 2.25s ⊂ + .65c axis H $\frac{15}{15}$.

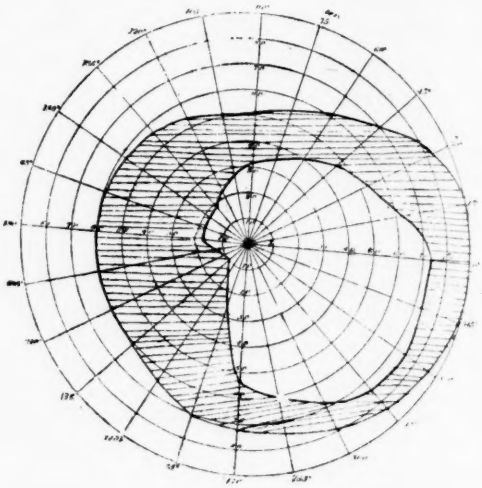
This was given for constant wear and eserine,

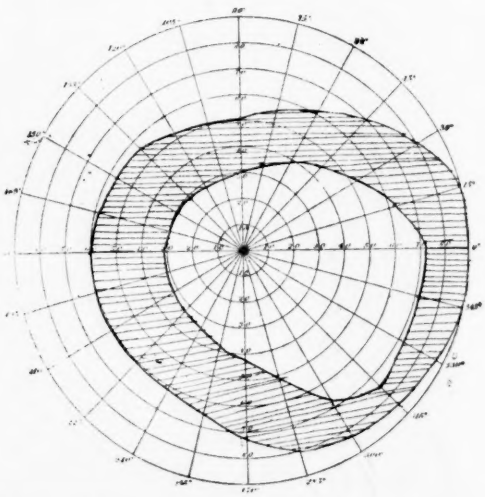
gr. $\frac{1}{12}$ to the ounce, ordered, inasmuch as iridectomy was declined. The patient up to the present date has used this drug almost continuously, except on a few occasions, when a slight conjunctivitis appeared and it was discontinued or had substituted for it pilocarpine. She has had a number of attacks of subacute glaucoma, the vision sometimes sinking to $\frac{20}{200}$, the cornea becoming slightly steamy, distinctly anæsthetic, and the episcleral vessels coarsely injected, the tension rising to + 2 or 3. All operation has been systematically declined and in all instances





reasonable recovery has been produced by the use of eserine increased in strength and in frequency of application over and above what was continuously used. At present the best vision in the right eye is $\frac{20}{40}$; in the left eye $\frac{20}{20}$. Diagram I represents the field of vision as it was found at the original visit, September, 1888, and as it has remained almost exactly on all occasions except during the exacerbations. It will be observed that it is of that form known as a concentric contraction, the limitation producing a band of darkened area varying from 20 to 25 degrees in breadth, surrounding the preserved field of vision. Diagram II represents the field of vision on the day of one of the subacute attacks; eserine one quarter of a grain to the ounce was instilled every two or three hours. It will be observed that the field of vision under these circumstances assumes the type of a left lateral hemianopsia with concentric contraction of the preserved area. Diagram III represents the field of vision after twenty-hours' use of such eserine,

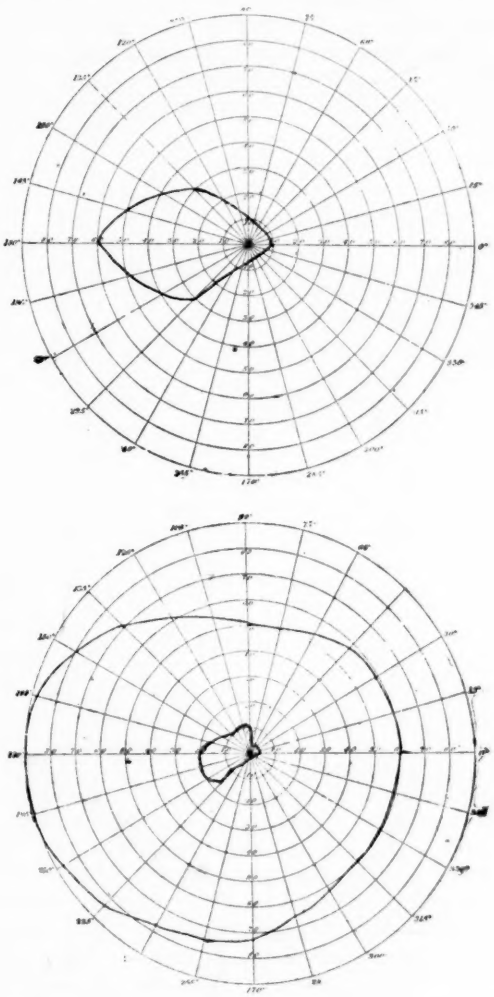




and it will be noted that the blind nasal area is beginning to contract, or, rather, that the preserved field is beginning to push its way into this blind area. Diagram IV represents the field of vision two days later, the eserine having been decreased to four times a day. After this the strength of the eserine was reduced again to one-twelfth of a grain to the ounce and used never less than twice a day. The visual field at the present time remains almost exactly as shown in

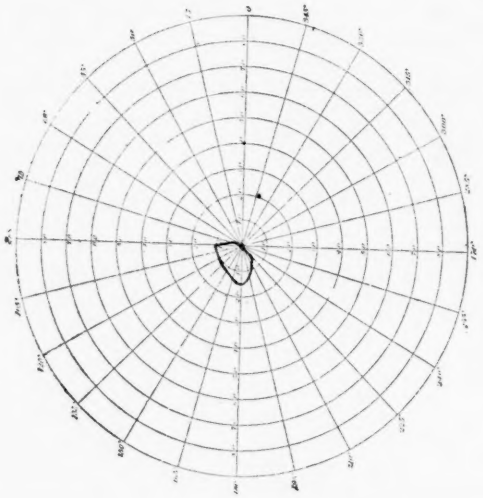
diagram IV, or, in other words, about the same as it was two and one-half years ago, there being only a slight loss of less than ten degrees upon the nasal side. There have been a number of subacute attacks in all instances characterized by the symptoms just described, sinking of the vision, steaminess and anæsthesia of the cornea, increase in tension, rapid reduction of vision usually to $\frac{20}{200}$ and loss of the nasal half of the field, and in all instances the sequence of events has been that which has just been described. It is proper to state that during the attacks full doses of chloral were also used, and, as we know, this drug is credited with an influence upon increased intraocular tension, and that the patient has continuously taken either nux vomica or strychnia, but never in very full doses. The points of interest in this case are its long continuance without very great loss in vision, the frequent subacute attacks which have resulted in reasonable cure under the influence of eserine, the form which the fields of vision assume in one of these attacks, namely, that of almost complete left lateral hemianopsia, and which under the influence of the drug gradually widens out until the lost nasal field is restored, and the entire field practically assumes the same proportion which it had before the attack. In fact, as has just been shown at the last examination, about a month ago, in spite of some loss of the central vision ($\frac{20}{40}$ as compared with $\frac{15}{40}$ at the original visit) the field is quite as large as it originally was, although not exactly of the same oval shape. The indication for eserine in this case is evidently very much more marked than in the one just reported, because in the first place more or less tension was always present, the anterior chamber was narrow, and in the second place during the exacerbations there was distinct rise in the intraocular tension. I cannot help believing that the eserine has been influential in preserving to this woman for more than two years the sight which she has.

Case 3. Chronic Glaucoma; Steady Progress Towards Blindness in Spite of Eserine and Full Doses of Strychnia; No Acute Attacks and No Pain.—James M., aged 60, of Irish birth, in January, 1890, began to notice before the one eye a spot which resembled the blue blossom on a blade of grass; he never had any iridescent vision nor was there pain or headache. He seems to have had no treatment for his eye until he came in September, 1890, or almost nine months later, when the following facts were ascertained: The dark spot no longer bothers him, but the vision has much depreciated; he is weak, somewhat nervous; has a chronic bronchitis; has used liquor frequently, of which the injection of the superficial capillaries in the nose and cheek give evidence. In the right eye the vision without correction was $\frac{20}{40}$; in the left eye $\frac{20}{100}$. In the right eye the pupil was prompt, the disc a horizontal oval, gray, with a scleral ring all around, the edges slightly veiled; no excavation and the choroid woolly. In the left eye the pupil very sluggish and slightly larger than its fellow; an oval disc, a shallow glaucomatous cup, passing entirely to the edge, which is slightly greenish all around, and beyond a halo-like annular absorption band assuming a triangular shape above; the veins very tortuous, the choroid woolly and



disturbed; the tension distinctly +. The field of vision is represented in diagram I, showing practically entire loss of the nasal half, and a somewhat trowel-shaped preservation upon the temporal side. Eserine, a sixth of a grain to the ounce, was given, and the patient reported very irregularly, having declined operative interference. On January 19, 1891, the vision in the right eye was $\frac{20}{40}$ without correction, but with correction, namely, + 1. ◯ +.90 axis 15 $\frac{20}{20}$; in the left eye $\frac{20}{200}$ barely. The field of vision is represented in diagram II, namely, entire loss of the nasal half and a very small irregular patch

of preservation upon the temporal side. Eserine or pilocarpine, the latter in twice the strength of the former, were used continuously, and the patient took sometimes iodide of potash and sometimes very full doses of strychnia. A month later the vision had declined to counting fingers at two feet, the lens showed numerous, fine dot-like opacities, and the dirty green color of the disc had increased. Still a month later the field of vision is represented in diagram II, a still further increase of the blind area having taken place, so that now only a patch fifteen degrees wide at its greatest diameter remains. Last month the condition was about the same, fingers

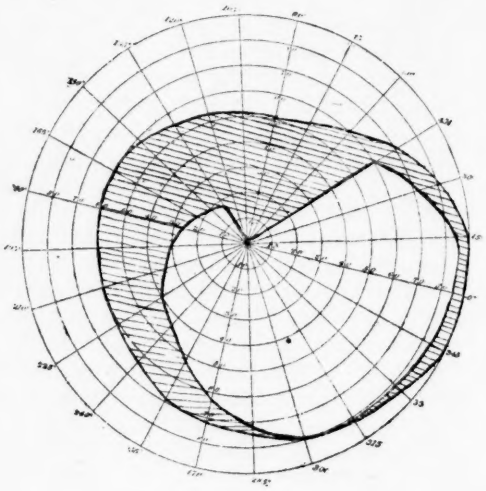


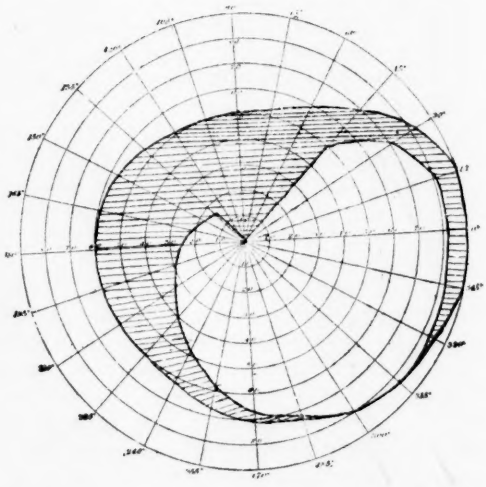
being counted eccentrically at about one foot. Thus far the right eye has not shown any glaucomatous signs, although he occasionally sees black spots in the field of vision. This is a good example of the steady progress of chronic glaucoma towards blindness in spite of medicinal treatment, and the fields of vision illustrate this well. Whether the process could have been stayed when the man first reported, in September, 18,0, by an operation, it would be purely speculation to answer. Even at that time the contraction of the field of vision was dangerously close to the fixing point, and perhaps that unfortunate result which has followed iridectomy in cases of this kind would here also have occurred.

Case 4. Visual Fields Illustrating the Effect of Iridectomy in Simple Chronic Glaucoma.—Mrs. X., an American by birth, had passed her sixtieth year, and applied for treatment in June, 1889, complaining of loss of vision, especially in the upper portion of the field of the right eye, a frequent desire to change her reading glasses, dull aching pain in the eyeballs, and occasional neuralgia through the trigeminal distribution. The patient has chronic dyspepsia, is excessively nervous, and often the subject of insomnia. The vision in each eye was $\frac{30}{40}$; this rose by means of a correction as follows:

O. D. + .50 ⌒ + .50 axis 15 $\frac{20}{15}$. O. S. + .50 ⌒ + .50 axis 165 $\frac{20}{15}$.

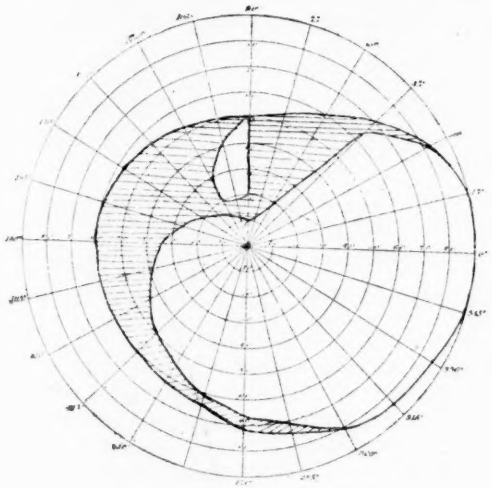
The pupils were small and active, the anterior chamber shallow, the irides not atrophic. In the right eye the disc was a horizontal oval with a halo-like band surrounding it, and a complete shallow glaucomatous cup; pulsation of the vessels was readily induced by pressure. In the left





eye the disc was oval, its axis 105 degrees, a deeper but not quite complete excavation, and a broad band surrounding the papilla. In the right eye T. + 1; in the left eye T. + ?. The field of vision showed in the right eye somewhat concentric contraction and loss of the upper and inner quadrant; in the left eye slight peripheral contraction. The patient was fully corrected and put upon eserine in the usual dose. Frequent examinations of the fields of vision, as well as of the central vision, were made at short

intervals. Very little change took place for the worse until about the first of the year 1890, then, after a prolonged siege of nursing followed by a pretty sharp illness (bronchitis), there was marked depreciation of vision, which fell to $\frac{2}{30}$ in the right eye, but remained at $\frac{2}{20}$ in the left. Eserine and pilocarpine were alternately used, and iridectomy advised. This was declined, and the patient did not make up her mind to submit to operation until June, 1890. Then, as the vision again failed, a broad peripheral iridectomy by the upward section was made on the right eye. Diagram I represents the field of vision of the right eye nine days before the operation, a form which had varied very little during the entire course of the disease. Diagram II represents the first field of vision taken after the iridectomy was performed; that is, eighteen days subsequent to the operation, at which time the central vision was $\frac{20}{40}$ — and the astigmatism exactly doubled,



requiring now a + 1 cylinder with its axis at 15 for its correction. It will be noticed that the field is almost exactly the same as that taken nine days previous to the operation. Diagram III represents the field of vision in December, 1890, or almost exactly six months after the operation. It will be observed by comparing it with the other charts, that the preserved field has widened, that the area of lost vision is now occupied by an irregular triangular patch 30 degrees in its length, and varying from 5 to 30 degrees in its width, situated directly upward, like an island in the dark area. In this patch the patient appreciates the passing of an object without being able to distinguish its quality. Thus, a circle of white on a black background is simply appreciated as an object, not as a circle of white. The dark area no longer touches the fixing point above, but there is an area of about 10 degrees in which the vision has returned. The central vision is now $\frac{20}{40}$ full and $\frac{20}{30}$ partly. There has been no increase in the glaucomatous process. I would note, then, as points of interest in this case, that the iridectomy checked the process, doubled the astigmatism, caused gradual but none the less distinct improvement in the visual field, with a corresponding improvement in the central vision, and finally, was the means of a partial restoration of perception in a previously entirely darkened area. It is proper to state that this patient has been taking almost continuously digitalis, nux vomica and strychnia, in the hope of increasing the circulation in the optic nerve and improving its function. It is quite possible that the good result may have been contributed to by these drugs.

DISCUSSION.

DR. EDWARD JACKSON reported a case of glaucoma of ten years' standing in which, about two months ago, there was a violent outbreak, the patient being a feeble old man, 90 years of age. He made a paracentesis and instilled eserine, and the pain disappeared and has remained so until now, with reduction of tension from + T. 3 to normal.

DR. G. A. ASHMAN called attention to the danger of deferring the operation too long by using eserine for temporary relief, and finally, when done, it is not satisfactory. Thinks bad results now are largely due to this fact. Eserine is only good in the beginning, and even then the effect is only temporary. Cases are rare where any permanent good effect comes from the use of eserine.

DR. EUGENE SMITH: I am in the habit of combining sclerotomy with the use of eserine or pilocarpine in treatment of all cases of chronic simple glaucoma. I make either simple sclerotomy after the method of Wecker, of Paris, or a double sclerotomy with two stop keratones—one in each hand—and I find better results when sclerotomy is combined with eserine, than with eserine alone.

DR. J. WALTER PARK, Harrisburg, Pa.: I can bear testimony to the remarks of Dr. de Schweinitz regarding the value of weak doses of eserine and pilocarpine in chronic glaucoma, having at present some cases under treatment bearing me out in what I say. During my stay at Mansfield Hospital, 1889, I observed with Dr. Morton and others cases of four years' standing of chronic glaucoma treated with weak doses of eserine, and which, in December, 1889, still had the same visual field. Iridectomies in chronic glaucomas were not followed by beneficial results, as a rule.

DR. RANDALL wished to emphasize the value of very weak solutions. Its success will often be as great as that of stronger solutions, and it is borne for many months without conjunctival irritation, although he had used it much in other conditions as well as glaucoma.

DR. S. C. AYRES only uses $\frac{1}{10}$ gr. of eserine to the ounce. Finds strong solutions harmful. He reported a case of glaucoma in which iridectomy was made in one eye and eserine used in the other, and after using eserine two and a half years, $\frac{1}{10}$ gr. to the ounce, the condition of the eye was such as to make the result quite satisfactory.

DR. DE SCHWEINITZ, in conclusion, said that he subscribed entirely to the doctrine that operation should be done in chronic progressive glaucoma, but eserine must occasionally be used temporarily, or when consent was lacking. He endorsed the value of weak solutions oftener, and the alternate use of eserine and pilocarpine. He referred to the physiological action of chloral upon intraocular tension.

DR. G. E. DE SCHWEINITZ referred to the difference of opinion existing in regard to the most satisfactory method of dealing with chronic glaucoma, and agreed with those surgeons who believe that it is proper to operate in cases of chronic progressive glaucoma after the patient has been properly warned in regard to the nature of the disease and the uncertainties which beset surgical interference. Inasmuch, however, as under certain circumstances it was impossible to operate owing to the lack of assent, the physiological action of eserine and pilocarpine on the eye was discussed, and a series of diagrams exhibited indicating the influence of these drugs upon chronic simple glaucoma. The first case was one of the simple variety of the disease, without sub-acute attacks, and without any special rise in tension or alteration in the anterior portion of the eye. His charts showed gradual widening of the fields of vision in all particulars, so much so that there was a complete restoration of a previously lost portion of contraction being found upon the nasal side, which also had lessened. This patient was under observation for nearly a year. The chief interest attaching itself to the case was that there had never been any increase in tension, although the typical appearances of a glaucomatous disease were present in the eyeground and it seemed to demonstrate that even in the absence of decided elevation of intraocular tension, eserine has power to improve the nutrition of the eye and cause a restoration in a contracted field. In a second case of chronic glaucoma with numerous sub-acute attacks the points of interest were the long continuance of the disease two and one-half years, without very great loss of vision, the frequent subacute attacks which resulted in reasonable cure under the influence of eserine, the form which the fields of vision assumed in one of these attacks, namely, that of almost complete left lateral hemianopsia, which under the influence of the drug gradually widened out until the lost field was restored and the entire field assumed practically the same proportions which it had before the attack. In a third case diagrams of the fields of vision were exhibited showing in spite of eserine the steady progress of chronic glaucoma towards blindness, until there was only a small patch about ten degrees wide remaining on the temporal side. The effect of iridectomy in simple chronic glaucoma when it yields a good result was graphically illustrated by a series of charts before and after iridectomy. The original loss of the field had been complete in the supero-nasal quadrant, while six months after the iridectomy the central vision remained as good if not a little better, than preceding this, while there was a gradual improvement in the visual field and a partial restoration or perception in a previously entirely darkened area. Incidentally Dr. de Schweinitz referred to the value of full doses of strychnia in temporarily controlling chronic glaucoma, and also spoke of the physiological action of chloral in full doses in lessening intraocular tension, one of his cases having apparently been benefited in this way by the drug.

THE STATISTICS AND LESSONS OF FIFTEEN HUNDRED CASES OF REFRACTION.

Read in the Section of Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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As indicative of the tremendous importance of refraction in modern ophthalmic practice—at least in that of mine—I note that, in the time covered by my case-records, 93 per cent. of all cases has, according to my judgment, required correction of ametropia, while but 7 per cent. required treatment of diseases of the eye alone.

Comparison of my figures with those, *e.g.*, of European ophthalmologists, will hardly yield satisfactory results, because every case here included was tested with the patient's eyes under a mydriatic except where presbyopia was so far advanced as to make the drug unnecessary.

The patients coming to the oculist are doubtless more frequently ametropic than people that do not come, and yet probably a very small percentage of the general community is emmetropic. Of all my patients, but four have been emmetropes—*i. e.*, about one-fifth of one per cent.

As pointing to the disproportionate incidence of ametropic irritations and injuries among males and females, I find that 76 per cent. of my cases have been girls and women; but 24 per cent. boys and men. I take it that this is not to be construed as meaning that females are more frequently ametropic than males, or that their ametropia is greater in degree. Part must be ascribed to the greater use by women of the eye

at near range demanded by their manner of life and occupation, part to their greater sensitiveness of nervous organization, part to their lessened resisting power, etc.

Twenty-four per cent. of all my cases have been presbyopes, but these corrections have been left entirely out of the present count.

In order to limit my statistics to refraction work alone, I have thrown out all cases in which there was intercurrent disease of the fundus or media of the eye that might violate the refraction result; all cases of aphakia; those with amblyopia not definitely connected with refraction; all in which systemic disease would possibly account for or change the refraction error. After thus setting aside such cases as these, I have remaining 2,866 eyes to form a basis of my study. The general results are shown in Table I.

TABLE I.—GENERAL REFRACTION OF 2,866 EYES.

Variety of Error.	Eyes.	Per Cent. of H.	Per Cent. of All.
Simple Hyperopia	373	17.	13.
Simple Hyperopic Astigmatism	172	7.	6.
Hyperopia, with Astigmatism	1,680	76.	58.
Total Hyperopic	2,225	100.	77.
		Per Cent. of M.	
Simple Myopia	63	9.	2.2
Simple Myopic Astigmatism	79	12.	2.8
Myopia, with Astigmatism	509	79.	18.
Total Myopic	641	100.	23.0
Grand Total	2,866		100.0

Thus more than three-fourths of all my cases have been hyperopic, and of this number three-fourths have been also astigmatic. Relatively to its own group, the cases of simple hyperopia have been nearly twice as numerous in hyperopia as those of simple myopia in myopia; the percentage being reversed in simple astigmatism; the percentage of each combined with astigmatism is almost identical. The tabulation of the hyperopic cases, not including astigmatism, is given in Table II.

Thus more than one third of all hyperopes and one-fourth of all eyes had an error of 0.50 D. or less, and nearly two-thirds of all hyperopes and nearly one-half of all eyes had an error of 1 D. or less. I have found it wise to correct a large proportion of these small errors.

Comparison of the annexed Table III of myopic eyes shows the foreseen result — the greater incidence of high degrees in myopia. The degrees above 5 D. are 17 times as numerous in myopia as in hyperopia. While 12.5 per cent. of hyperopes had an error above 2 D., 34.5 per cent. of myopes had the corresponding defect.

The percentages of each variety of astigmatism, arranged in groups, are given in Table IV.

Included in this table, without separation, are 172 cases of simple hyperopic astigmatism and 79 cases of simple myopic astigmatism. There

TABLE II.—REFRACTION OF 2,053 HYPEROPIC EYES, ASTIGMATISM NOT INCLUDED.

Degree.	Simple H.	H. plus Ah.	H. & H. plus Ah.	Groups.		
D.	Eyes.	Eyes.	Eyes.	Eyes.	Per Cent. of all H.	Per Cent. of all Eyes.
0.12	. . . . .	24	24			
0.25	18	280	298	705	34.4	24.6
0.37	9	86	95			
0.50	46	242	288			
0.62	13	110	123			
0.75	39	193	232	633	30.9	22.
0.87	14	43	57			
1.00	51	170	221			
1.12	. . . . .	8	8			
1.25	42	120	162	283	13.7	10.
1.50	29	84	113			
1.75	23	66	89	171	8.3	6.
2.00	27	55	82			
2.25	14	25	39			
2.50	9	33	42	138	6.6	4.7
2.75	8	18	26			
3.00	3	28	31			
3.25	1	12	13			
3.50	8	15	23			
3.75	2	5	7	70	3.4	2.5
4.00	7	20	27			
4.25	. . . . .	2	2			
4.50	5	13	18	35	1.7	1.2
5.00	3	12	15			
5.50	. . . . .	6	6			
6.00	. . . . .	2	2	18	.8	.6
6.50	1	5	6			
7.00	1	3	4			
. . . . .	373	1,680	2,053	2,053	100.0	71.6

TABLE III.—REFRACTION OF 572 MYOPIC EYES—ASTIGMATISM NOT INCLUDED.

Degree.	Simple M.	M. plus Am.	M. & M. plus Am.	Groups.		
D.	Eyes	Eyes.	Eyes.	Eyes.	Per Cent. of all M.	Per Cent. of all Eyes.
0.12	. . . . .	8	8			
0.25	3	125	128	229	40.0	8.0
0.37	. . . . .	14	14			
0.50	10	69	79			
0.62	. . . . .	3	3			
0.75	3	43	46	78	13.7	2.6
0.87	. . . . .	1	1			
1.00	5	23	28			
1.25	3	18	21	38	6.6	1.3
1.50	1	16	17			
1.75	1	14	15	30	5.2	1.1
2.00	4	11	15			
2.25	. . . . .	7	7			
2.50	4	12	16	53	9.2	1.9
2.75	3	8	11			
3.00	3	16	19			
3.50	3	11	14	30	5.3	1.1
4.00	2	14	16			
4.25	. . . . .	4	4			
4.50	. . . . .	12	12	36	6.3	1.3
4.75	. . . . .	2	2			
5.00	2	16	18			
5.50	2	11	13			
6.00	5	6	11			
6.50	. . . . .	5	5			
7.00	. . . . .	8	8			
7.50	. . . . .	7	7			
8.00	1	5	6			
8.50	. . . . .	1	1	78	13.7	2.7
9.00	2	3	5			
10.00	3	6	9			
11.00	. . . . .	5	5			
12.00	1	. . . . .	1			
13.00	. . . . .	1	1			
14.00	. . . . .	4	4			
15.00	2	. . . . .	2			
Total	63	509	572	572	100.0	20.0

are similarly included 57 cases of mixed astigmatism. The cases of simple hyperopic astigmatism, as compared with all cases of hyperopic astigmatism, are less than 10 per cent.; those of simple myopic astigmatism, as compared with all of myopic astigmatism, about 13 per cent. Low

TABLE IV.—REFRACTION OF 2,440 ASTIGMATIC EYES.

Degree.	Simple and Compound H. As.	Simple and Compound M. As.	Total H. As. and M. As.	H. As. Per Cent. of all H. As.	M. As. Per Cent. of all M. As.	Total As. Per Cent. of all As.
D.	Eyes.	Eyes.	Eyes.	Per Cent.	Per Cent.	Per Cent.
0.12	18	4	22			
0.25	402	70	472	55.8	35.9	50.5
0.37	225	45	270			
0.50	388	92	480			
0.62	111	26	137			
0.75	236	53	289	27.6	22.1	26.4
0.87	18	. . . . .	18			
1.00	146	51	197			
1.25	72	44	116	7.2	13.1	8.7
1.50	62	33	95			
1.75	27	34	61	3.1	10.2	4.9
2.00	30	26	56			
2.25	16	9	25			
2.50	20	22	42	3.6	8.6	4.9
2.75	13	5	18			
3.00	19	15	34			
3.25	8	8	16			
3.50	14	18	32	1.7	6.4	2.9
3.75	3	. . . . .	3			
4.00	6	12	18			
4.25	2	. . . . .	2	0.6	1.3	0.8
4.50	9	7	16			
5.00	3	5	8			
5.50	1	1	2			
6.00	1	4	5	0.4	2.4	0.9
6.50	. . . . .	1	1			
7.00	. . . . .	3	3			
10.00	2	. . . .	2			
. . . .	1,852 76 per ct.	588 24 per ct.	2,440	100.0	100.0	100.0

degrees of astigmatism of the hyperopic variety are relatively more numerous than of the myopic, whilst the high degrees are still more numerous in the myopic.

The axes of astigmatism are shown in Table V.

TABLE V.—AXES OF 2,440 ASTIGMATIC EYES.

Hyperopic.	Eyes.	Per Cent. of H. Axes.	Per Cent. of All Axes.
Axis 90°	953	51.4	39.0
Axis 180°	267	14.5	11.0
Symmetrical (not 90° or 180°)	292	15.8	12.4
Unsymmetrical	340	18.3	13.9
Total	1,852	100.0	. . . . .
Myopic.	**Eyes.**	**Per Cent. of M. Axes.**	**Per Cent. of All Axes.**
Axis 90°	90	15.2	3.7
Axis 180°	226	38.3	9.1
Symmetrical (not 90° or 180°)	104	18.1	4.1
Unsymmetrical	168	28.4	6.8
Total	588	100.0	100.0

As the question of symmetry and asymmetry is of much interest, I add another table, setting forth in further detail the 254 cases of non-symmetrical axes. Included in Table V are 40 cases (80 eyes), in which the axis of one eye was 90°, and of the other eye, 180°. Those cases in which one axis was either 90° or 180°, and the axis of the fellow-eye neither 90° nor 180°, are, in Table V, included among the unsymmetrical axes, and further differentiated in Table VI.

TABLE VI.—UNSYMMETRICAL AXES—254 CASES.

Hyperopic.	Cases.	Per Cent. of Unsymmetrical H. Axes Cases.	Per Cent. of all Unsymmetrical Axes Cases.
One Axis 90°	70	41.2	27.6
One Axis 180°	25	14.7	9.8
Both Axes same (not 90° or 180°)	8	4.7	3.2
Sundry (not included in above)	67	39.4	26.4
Total	170	100.0	. . . . .
Myopic.		**Per Cent. of Unsymmetrical M. Axes.**	
One Axis 90°	9	10.7	3.6
One Axis 180°	32	38.0	12.3
Axes same (5-5, 10-10, 20-20)	3	3.5	1.2
Sundry (not included in above)	40	47.6	15.9
Total	84	100.0	100.0

In studying these cases of unsymmetrical axes I have been interested in trying to discover some law or tendency to a law to which they would conform. We know that in all hyperopic astigmatism the primary law is a tendency of the axis toward polarity at 90°. If we add to those cases where both axes are at 90°, those asymmetrical instances in which one axis only is at 90°, we get a total of 1,023 hyperopic eyes, or 55 per cent., with astigmatic axes at 90°. If to this number we add all the myopic axes at 90°, we have a total of 1,122, or 46 per cent. of all astigmatic eyes. In the same way the myopic axes find their preferential pole at 180°, and adding to these 226 symmetrical cases the 32 in which one axis is at 180°, we have a total of 258 eyes, or 44 per cent. of all myopic axes. Adding, again, the 267 symmetrical hyperopic axes at 180° and the 25 unsymmetrical, we have a total of 550 eyes, or 22 per cent. of all astigmatic eyes, with the axis at 180°. Hyperopic axes are more apt to be at 90° than myopic axes are at 180° as 5 is to 4, *i. e.*, they are 20 per cent. more frequent; and any axis of astigmatism whatsoever is more than twice as liable to be at 90° as it is to be at 180°, the proportion being as 46 is to 22. Over two-thirds (68 per cent.) of all astigmatic eyes have their axes either at 90° or 180°. It is also seen that there is a much greater tendency to unsymmetrical axes in myopia than in hyperopia, the ratio being as 28 is to 18, or 65 per cent.

Can we find any law governing the unsymmetrical axes? Both the hyperopic and myopic varieties appear to be similarly lawless. Take the hyperopic class: In 25 cases with one axis at 180° there are six instances where the fellow axis is twice alike, the remaining 19 being all different one from another. In 70 cases of asymmetry where one axis is 90°, there are 10 cases of

$\frac{75}{90}$ (or $\frac{90}{75}$), 9 of $\frac{90}{60}$ (or $\frac{60}{90}$), 6 of $\frac{110}{90}$ (or $\frac{90}{110}$), 6 of $\frac{90}{105}$ (or $\frac{105}{90}$), 6 of $\frac{70}{90}$, 5 of $\frac{65}{90}$, the rest being well scattered in groups of one, two or three of a kind. The entire remainder of asymmetrical cases will not as well submit to any law, order or grouping that I am able to discover. The only approximation to such a law consists in the fact that if but one axis can be brought into coincidence with either major pole, the fellow axis is decidedly repelled away from it. In the 70 cases of asymmetry where one axis was 90°, the other was within 5° of the same in only two cases. Possibly personal negligence may in part account for this. When one axis is within 5° or 10° of one of the major poles, we are very prone to call it 90° or 180°. Within the past year I have by experience learned the importance of scrupulous exactness in this respect, and have devised a mechanical aid helping to detect these slight differences with care and certainty. Bearing still farther upon the question, I add that in 36 cases of sundry asymmetrical hyperopic astigmatism, neither axis being at 90° or 180°, I have found that 11 cases were but 5° out of symmetry, 13 but 10° out, 10, 15° out, etc. It remains an open question whether this striking difference from the cases above alluded to, where one axis was 90° or 180°, is due to my greater care, and unconscious freedom from a prepossession, in accurately locating the *unusual* axis, or to some hidden and different law. I may also add that in the 70 and 25 cases where one axis was at 90° or 180°, there is a decided and clearly marked *disinclination* of the fellow axes to cluster about or tend toward either major pole. The hyperopic axes fly from the 90° pole a little less decidedly than the myopic axes fly from the 180° pole. This would clearly argue against the personal equation or negligence theory. I should also say that the cases of symmetrical axes other than those of 90° or 180° likewise show no well-marked tendency to fall into groups or suggest any governing law.

Before leaving the subject, I wish to ask my colleagues if they have found any undoubted instances of a change in the axis of astigmatism caused by the use of the mydriatic. I have had several such cases, the patient, after the return of the accommodation, emphatically refusing the axis as clearly demanded under the mydriatic. My two most troublesome cases contradicted each other as to whether the mydriatic or non-mydriatic axis were the better. Both were cases of unsymmetrical axes, and of compound hyperopic astigmatism. One, under the drug, demanded the axis (0.37 D.) at 105° (the fellow being at 90°), and with functional accommodation would have it at 60°. I gave it at 60°, but in two months grievous pain in the eye, and chorea of the side of the face, forced me to return to the mydriatic axis, with sudden cessation of the ocular pain and facial spasm. The other case, under the mydriatic, demanded the axis (1.50 D.) at 150°, the fellow being at 180°. This I ordered, but found soon afterward that axis 105° was desired by the functional accommodation, and this has now been worn for a year or more with perfect satisfaction. The fact has led me to scrutinize most carefully those cases in which correction of the ametropia does not relieve the symptoms. It is also pertinent to inquire if in some cases, soon after applying the glasses, the relief at first experienced, but soon ceasing, may not be due to a refractive change following and a direct reaction of the eye, its innervation, etc., to the glasses themselves.

The records of insufficiency here grouped together are based solely upon the 20-foot tests.

TABLE VII.—MUSCULAR INEQUILIBRIUM AND HYPEROPIC REFRACTION.

ESOPHORIA.

Degree.	Cases.	Per Cent. of H. Esophoria.	Per Cent. of All Esophoria.	Per Cent. of All Hyperopia.
1	98	29.0	25.2	8.8
2	106	29.5	25.7	9.0
3	58	16.2	15.0	5.2
4	36	10.2	9.2	3.2
5	16	4.5	4.1	1.6
6	8	2.2	2.0	.8
7	3	.8	.7	.3
8	10	2.8	2.5	.9
9	2	.5	.5	
10	6	1.7	1.5	
12	4	1.0	1.0	
14	2	.5	.5	1.6
15	1	.2	.2	
16	1	.2	.2	
18	2	.5	.5	
20	1	.2	.2	
. . . . .	348	100.0	89.0	31.4

EXOPHORIA.

Degree.	Cases.	Per Cent. of H. Exophoria.	Per Cent. of All Exophoria.	Per Cent. of All Hyperopia.
1	55	35.9	28.0	4.9
2	33	21.5	17.0	2.9
3	25	16.3	13.0	2.2
4	17	11.2	8.0	1.5
5	8	5.2	4.0	.8
6	3	1.9		
8	3	1.9		
9	2	1.4		
10	4	2.6	7.0	1.3
12	1	.7		
15	1	.7		
18	1	.7		
. . . . .	153	100.0	77.0	13.6

According to my table, 89 per cent. of all esophorias were connected with hyperopia of some kind, but that 77 per cent. of all esophorias are likewise connected with hyperopia, is noteworthy. In myopia the percentage of esophoria and exophoria is the same, and the esophoria of hyperopia is but little more than twice as high as the exophoria. It seems to me we are far from a satisfactory theory of the etiology of these conditions. Clinically I have been struck by the fact that very often a high degree of exophoria, and even somewhat often of esophoria, may be ignored without any resultant symptoms, local or

reflex. I have also found that the symptoms frequently bear no sort of relation to the degree or kind of heteropia. As regards treatment, the rule I have come to follow is to correct by prisms the internal insufficiency when above one degree and certain that it is permanent, particularly if the patient be a hard-worker at near-range. When the interni are as weak as 12° I advise tenotomy. In external insufficiency, I am greatly inclined to trust the ametropic correction alone, and certainly if no pronounced reflex symptoms exist. Experience has constantly shown me this is a good rule to follow. I remember many cases, but especially one, a woman of 30 who had never worn glasses and who usually had a positive squint of the left eye. For two years the eye keeps straight when the non-prismatic spectacles are worn, and without any reflex symptoms.

TABLE VIII.—MUSCULAR INEQUILIBRIUM AND MYOPIC REFRACTION.

ESOPHORIA.

Degree.	Cases.	Per Cent. of Myopic Esophoria.	Per Cent. of All Esophoria.	Per Cent. of All Myopia.
1	11	27.	2.8	3.4
2	12	29.	3.1	3.8
3	5	12.	1.3	1.6
5	4	10.	1.1	1.2
6	4	10.	1.1	1.2
8	2	5.	.5	.6
10	1	7.	.7	1.0
16	1			
20	1			
. . . . .	41	100.0	10.6	12.8

EXOPHORIA.

Degree.	Cases.	Per Cent. of Myopic Exophoria.	Per Cent. of All Exophoria.	Per Cent. of All Myopia.
1	1	2.	.5	.3
2	15	34.	7.6	4.5
3	11	25.	5.5	3.4
4	7	16.	3.5	2.2
5	2	4.	1.0	.6
6	2	19.	4.	2.0
9	1			
10	3			
15	1			
18	1			
. . . . .	44	100.0	22.0	13.0

Remove the glasses and the eye rolls inward at once. She had a high degree of compound hyperopic astigmatism, the left eye requiring a cylinder 2.25 D. stronger than its fellow.

I have had a number of patients in whom, at the first examination, there was a demonstrated inefficiency of a few degrees, but who within a short time after wearing ametropic and prismatic correction were found to have a progressive weakness of the muscle. The symptoms demand attention: with increase of the prisms temporary relief is obtained, but in a month or several still greater increase of the prism is demanded. It looks to the patient as if the spectacles were making matters worse. One case ran from 6° to 16° within a year. I cut the tendon and reduced the muscular balance to equilibrium, and am now wondering if the road is to be again traveled all over. What is taking place in these muscles? To say "spasm" seems like a *confessio ignorantiæ*. I always feel like exclaiming, "*Bosh!*" whenever spasm of any ocular muscle is mentioned.

During the time covered by these statistics I have had 8 cases of convergent and 2 of divergent strabismus, not included in the tables.

Turning to hyperphoria, I have had 20 cases: 8 of 1°, 4 of 2°, 3 of 4°, 1 of 6°, 1 of 7°, and 1 of 8°. Among these was one case of right monolateral partial ptosis in which persistent and powerful effort to raise the upper lid had wrinkled and arched the brow and forehead to a remarkable degree. The head was canted to one side and backward, and the inferior rectus of the eye had naturally become over strong. Correcting lenses, 1.50 D. cylinder with a base of prism in the right, not only relieved the distress, but has quite cured the ptosis, which, therefore, seems to have been of a reflex nature. The changed appearance of the man and his power to raise the lid is a great cause of congratulation by all his friends. I have usually corrected hyperphoria with prisms and with success. The case with 8° is an anomalous one. She has never had any severe reflex symptoms either before or since getting glasses. She had a high compound myopic astigmatism, with amblyopia, and with 4° of esophoria. With the visual axis horizontal there was diplopia corrected by a prism 6° or 8° base down in the left. But upon looking downward the diplopia disappeared, without the prism, or was reproduced by it. There was no history of traumatism. Six months after correcting her ametropia and esophoria, the hyperphoria, without correction, had reduced itself to 3°, and no reflex symptoms exist. The case I have classed as 7° ranged from 6° to 10° on different days, but was usually about 7°. This prism, while correcting the hyperphoria, with the axis of vision horizontal, and accurately facing the object, at once produced diplopia and distress with movements of the eyes, or in walking and looking about. The patient's health was so profoundly bad that I did nothing for the hyperphoria. She was a presbyope, 1.25 D., with a very small degree of myopia. In the past five months she is, under general treatment, improving rapidly in general health, and the ocular symptoms are disappearing. The patient with 6° of hyperphoria could wear for permanent use only a 4° prism, though the test clearly showed 6°. With the 4° prism he has perfect relief and satisfaction. The cases with 4° or less wear the prismatic correction with entire satisfaction.

Speaking generally, then, my experience leads me to correct all hyperphorias of 4° or less, and

most esophorias of more than 1° with prisms; to ignore exophoria until (very rarely) forced to consider it, after the patient has worn the ametropic correction for a considerable time; to perform tenotomy in decided strabismus, and then only after having worn ametropic correction for a time, and if possible with atropine in the non-squinting eye; to perform tenotomy in insufficiency, only when of 12° or over, and when accompanied by decided reflex symptoms. I have never had a case of imbalance of the muscles without an ametropia demanding correction. It is only in such a mythical case that I might perhaps be prevailed upon to consider the remote possible advisability of beginning to think of commencing the study of graduated tenotomy!

Forty-four of my cases, 3 per cent. of all, have had the same refraction error in both eyes. As to anismetropia, I have never found a difference between the two eyes so great that the proper refraction of each eye was not borne in combined action. The greatest differences I have found were from 4 D. to 9 D. in sphericals, and 4 D. to 6.50 D. in cylinders.

One of the highest hyperopic errors with retained acuity was + sph. 6.00 D. ⌒ + cyl. 4.00 D. I think the highest simple hyperopic astigmatism was, R., + cyl. 6.00 D. ax. 95°, L., + cyl. 4.50 D. ax. 85°. To this a presbyopic correction of 3.00 D. was added in improved bifocal lenses, the result being all that could be desired. I have never prescribed a myopic lens greater than 15.00 D., though I have had patients whose absolute myopia was greater. The case of double hyperopic astigmatism of 10.00 D. was certainly as high as that, though there was great amblyopia. Besides the frightful astigmatism, he had 5.00 D. of hyperopia. He was, of course, unable to read, and was quite dull of intellect. He was a sailor, and not allowed to wear glasses. One wonders how he could have done his work at all. As an instance of complicated defect, a physician and friend of mine is now wearing with great satisfaction:

O.D., — sph. 7.00 D. ⌒ — cyl. 1.00 D. ax. 45°; O.S., — sph. 7.75 D. ⌒ — cyl. 1.00 D. ax. 135°; prism 5° each eye, base in; prism 2° left, base up; prism 2° right, base down.

A word as to full correction. The advocates of this theory say we must aim to put the eye in an emmetropic condition; this is the ideal we seek to bring about or approximate. I deny the major premise *in toto*. The *wherefore* is logical if the *whereas* be allowed. I cannot allow it; and for the following reasons:

1. The *history* of the pair of eyes we are prescribing for is often, and generally, one of abnormal use or abuse long continued. The eye, from its very history, is in an abnormal condition, and cannot be proceeded with as if normally or physiologically reacting.

2. Long excess, deficiency or abnormalism of function has begotten organic changes in the eye and its innervation mechanism. In hyperopia the ciliary muscle is abnormally developed or hypertrophied, in myopia correspondingly weakened and undeveloped, in astigmatism unphysiologically developed. These organic and functional changes cannot be neutralized quickly, and will continue to mar the results of all cast-iron rules, and for a time dependent upon the length of evolution of the defect, the peculiarities of the reaction, the vital forces, the temperament, etc.

3. The work these eyes has to do is so far from ideal, so variant and abnormal, that abstract rules will not apply. Every case is a law unto itself. Civilization crushes ocular ideals as brutally and ruthlessly as psychical ones. Sewing girls, bookkeepers, literary people, etc., who must work at near range from twelve to sixteen hours a day, cannot have much receptiveness for ideals and abstract rules.

Many other reasons conspire to lead me to lend no ear to such advice. Sometimes I over-correct hyperopia; sometimes aim at artificial emmetropia; usually I under-correct all defects except astigmatism. I believe the bitterest of errors is to fully correct myopia. I might do it in a farmer, but in an urban liver, never. So long as one does it, I believe many of his patients will be the worse for the service, and finally drift into other hands. Nearly all patients I have had who have previously been much under the care of others, have been examples of full correction. Selfishly, it is a good plan for us to advise others. It is like virtue, we all believe in it—for others! In myopia it (over-correction, not virtue!) puts the weakened ciliary muscle to a strain the equivalent of an irritating hyperopia of a degree corresponding to the size of the error, the length of its continuance, the reacting quality of the organism and the amount of near work to be done. In hyperopia, the hypertrophied ciliary muscle will refuse inaction, or even a partial deprivation of its accustomed work, for months, and if of long evolution, for years. In astigmatism, the reaction comes very promptly, owing to its predominant nervous or functional nature, and I find that full correction is usually borne satisfactorily, though exceptions occur even here.

Instead of aiming at an ideal of emmetropia, I find I am commonly aiming at an ideal of slight myopia, varying in degree from 0.37 to 2 D. in myopia, and from 0.12 to 0.75 D. in hyperopia. In a myope this can be instituted at once, but in a hyperope never at once (unless it be for near work), but often in the course of time, or by means of a second pair of lenses for near work, though presbyopia proper is a long way off.

The abridged records of a few peculiar or instructive cases may not be uninteresting to refractionists:

1. Miss S., aged 54, an intelligent city lady, has never worn glasses, and *has never had a headache.* She was found to require the following correction:

O.D., + sph. 0.62 D. ◯ + cyl. 2.75 D. ax. 6°; O.S., + sph. 0.62 D. ◯ + cyl. 3.25 D. ax. 120°. Esophoria 1°, and presbyopia.

2. A child of 7, for the past 3½ years has had "spasms," the number averaging about fifteen a week. Has also screaming or crying spells lasting sometimes for one or two days. Would not permit examination of the eyes. With paralysis of the accommodation by atropine the spasms have ceased for 2½ months, except three attacks, two of which followed neglect of the drops in the eyes.

3. Miss K., aged 30; headaches at vertex all life; growing worse of late; sick at stomach for 24 hours after riding in cars. A life of misery, fainting fits, subjective visions, nightmare, weariness of life, and latterly symptoms of mental disorder. Refraction:

O. D. + sph. 2.00 D. ◯ + cyl. 1.50 D. ax. 80°. O. S. + sph. 3.25 D. ◯ + cyl. 1.25 D. ax. 115°. No heterophoria.

The distressing symptoms disappeared almost entirely and at once upon getting spectacles, and for the past year she continues a healthy, happy grateful woman.

4. F. M., prior to a severe attack of monocular herpes zoster ophthalmicus was nearly emmetropic. After recovery from the inflammation the affected eye required—sph. 1.25 D., ◯ + cyl. 3.75 D. ax. 180°. The other eye remains unchanged and perfect acuity exists in both.

5. Professor J., requires for one eye—cyl. 4.50 D. ax. 175° ◯ + cyl. 4.50 D. ax. 32°, with which he has perfect acuity the fellow-eye taking—sph. 2.25 D. ◯ — cyl. 2.75 D. ax. 60°.

6. Miss McC., has had intense frontal and then occipital headaches the past four years, with distressing sleepiness most all the time, and with great anorexia. There was immediate relief of all symptoms by:

O. D., cyl. 2.75 D., ax. 150° ◯ + cyl. 1.00 D. ax. 80°. O. S., cyl. 2.75 D. ax. 20°, ◯ + cyl. 1.00 D. ax. 105°.

7. Mr. T., had headaches at base of brain and sick-headaches for 45 years. Has taken a "cart-load of medicine;" has been cupped and leeched and "electric-batteried" all his life, his neck being a mass of scars. No physician ever said "eyes" to him. He has only a low degree of compound hyperopic astigmatism, but as usual in such cases, at unsymmetrical axis. Correction of this and presbyopia, with unexpected quickness stopped his sufferings within a month.

8. Mrs. M., aged 26, had headache for 11 years, [frontal for 9, occipital for past 2 years]. At the rhythmic crisis of headache there is great numbness of the left side of the face, tongue, arm and trunk, the anæsthesia preceded by blindness of the left eye, things appearing to dance. Pain in the left eye then supervenes, and vomiting follows. The anæsthesia lasts about ten minutes. The attacks occurred about once a month but not connected with menstruation. After correcting a slight hyperopic astigmatism at unsymmetrical axis the attacks were at once transferred to the right side of the body, changed in character, lessened in violence and have now about entirely subsided.

9. Mr. P., has for 18 years had constant severe "colds" the whole winter long. The coryza was vaguely connected with ocular irritation, lachrymation, etc. He has never worn glasses until last summer. He has a high degree of compound myopic astigmatism at unsymmetrical axis and six degrees of esophoria. There is no doubt in his mind as to the influence of his spectacles in making him entirely free from any cold the past winter.

10. An obstinate case of vernal conjunctivitis or Frühlingskatarrh, disappeared at once with correction of the ametropia.

11. Mrs. O'C., aged 32, looking as if 50, has had brutal frontal headaches for 17 years. The back part of the head is tender to the touch. Often has "blind-spells," and an abnormal appetite not satisfied by food. Forehead and eyebrows burn and as she avers, *bleed!* Says the bleeding is not from scratching or injury. Requires:

R. —sph. 9.00 D., ◯ — cyl. 3.00 D., ax. 135°. L. —sph. 7.00 D., ◯ —cyl. 2.00 D. ax 75°. Has been wearing simple spherical lenses alike in both eyes from a prominent hospital.

12. R. + cyl. 4.50 D. ax. 90° ◯ —cyl. 1.25 D. ax. 180°. L. + cyl. 3.50 D. ax. 90° ◯ — cyl. 3.00 D. ax. 175°. The last cylinder put at 180° could not be worn.

13. A prominent oculist of a distant city prescribed without a mydriatic:

O. D. + cyl. 0.25 D. ax. 90°. O. S. + cyl. 1.35 D. ax. 90° ◯ — cyl. 2.00 D. ax. 180°. By the aid of a mydriatic I find the true refraction:

O. D. + sph. 1.00 D. O. S. + cyl. 2.25 D. ax. 105° ◯ — cyl. 2.00 D. ax. 15°. The headache continued with the former glasses, stopped with the latter.

14. Mr. W., wearing for high myopia, a full, or an over-correction, for constant and much near use, with severe reflex symptoms ocular and systemic. I reduced the correction from 6.75 D. to 4.50 D., impairing, of course, the distant vision immensely. Immediate cessation of the symptoms followed and in two months a recovery of the normal acuteness. The old glasses cannot now be worn five minutes.

15. W. K., dyspepsia and diffuse headache for 4 years. Sick-headache, vomiting, etc., two and three times a week. Often faints in street. Past

three months headache only at vertex. Weight reduced from 194 to 140 lbs. Has consulted the best and many physicians. Has taken every drug, and done everything could be thought of. Has a defect, the most certain to work mischief of any—a typical health-wrecker:

O. D. + sph. 0.62 D., ◯ + cyl. 0.62 D. ax. 180° O. S. + sph. 1.00 D. ◯ + cyl. 0.37 D. ax. 45.°

16. J. Y., had for 10 years had 40 to 50 attacks a day of great dizziness. Had always to ride with closed eyes, as walking a short distance, looking upward, or downward, etc., brought on an attack. Had typical agoraphobia. Cured entirely for past year by:

R. — sph. 0.75 D ◯ — cyl. 1.00 D. ax. 90°. L. — cyl. 3.00 D. ax. 30° ◯ + cyl. 3.50 D. ax. 120°.

The last case but one leads me to a word as to the sort of ocular defect that is most injurious to the nervous system. The least harmful is simple myopia, so long as only of a moderate degree and without great anisometropia. I have never had such a case with any reflex symptoms. Simple hyperopia if nearly alike in both eyes will often set up no irritation in the non-sensitive and out-of-door living, but may bring trouble to the overworked and nervous type. Anisometropia will produce disorder unless one eye be discarded. I would place simple and compound symmetrical myopic astigmatism next in the heirarchy, and then the same defect in hyperopia. High degrees of symmetrical astigmatism are often free from very bad results, and they are not productive of amblyopia. Compound hyperopic astigmatism if nearly alike in the two eyes, and especially if of high degree and symmetrical, will sometimes be borne unexpectedly well; add anisometropia and suffering is almost certain. But the very acme of torment is from a medium low degree of compound hyperopic or myopic astigmatism, each differing in quantity in the two eyes, with unsymmetrical axes and with preserved desire or ability of binocular vision. There is no nervous system can resist ruin under such circumstances. Asymmetry of axes, anisometropia and preserved desire for binocular vision is a diabolic combination that has wrecked many a life.

I have found it an anomalous fact, one usually not comforming to physiological laws, that, with ocular irritation, the reflex does not as a rule return to the eyes but is commonly inhibited, resulting in headache and cerebral abnormalism, or is derouted, resulting in reflex neuroses. I have elsewhere tried to explain this fact.[1] Classing together all the reflexes that may be called ocular in result, that *do* return physiologically to the eye, I find the following: (See Table 9.)

There is one symptom and consequence of eye-strain that I have omitted to mention because it required especial explanation: I have named it ametropic choroido-retinitis. I have urged it upon the notice of the profession because I grow more assured that however much subsequent observation by others may modify the clinical and etiological features I have pointed out, there will still remain a great significance and an inexpugnable residuum of truth in my contention. Stated in general terms I find that the cause of eye-strain, *i.e.*, abnormalism of the image-focalization and position, is also the cause of macular abnormality or disease. When the untrue focalization or position is within the strained power of the compensatory mechanism, to neutralize the fact of eye-strain with its infinite variety of symptoms is patently present and the all-important fact. When the compensatory apparatus is unable to neutralize completely or habitually, there will in time, and in the great majority of cases, arise an unnatural condition of the macular or fovea, evidenced objectively by local abnormalism of pigmentation or coloring, and subjectively by subnormal acuity in advanced cases or by disproportionately lessened response to reduce illumination. The ultimate condition of advanced cases is commonly called central choroiditis. The phenomena has nothing in common with "drag," "conus," or other nerve-head, or mechanical changes in stretching globes—except that a common cause often precedes both. It is difficult to examine the macula, and the pigmentary changes are usually so slight that these are naturally overlooked and hence an excusable though sometimes amusing skepticism. The symptom of disproportionately lessened retinal reaction to lessened illumination seems to me of great value and significance. It is essentially one with the commonest symptom of all eye-strain patients—sleepiness in near-work by artificial light. The transmutation of an imperfect image or æther-waves by the retina, into a series of neural impulses, is a severe labor, and produces abnormalism of the peripheral or retinal end-organ at the point of greatest impact and labor. Unphysiological stimulus always necessitates abnormal changes in the recipient mechanism. Hence the retinal injury. The brain has a still severer labor to manufacture out of the in-

TABLE IX.—EYE-STRAIN, WITH OCULAR REFLEXES.

Symptom.	Cases.	Per Cent. of all Refrac. Cases.
Pain in the Eyeballs or Orbits	161	11.0
Photophobia	15	1.0
Blepharospasm	11	1.0
Blepharitis, Styes, etc.	21	2.0
Partial Ptosis	2	
Conjunctivitis excluded except in	15	1.0
Lachrymation, Epiphora, etc.	20	2.0
	245	17.0

[1] "The Influence of Sexualism in Reflex Ocular Neuroses," Med. and Sur. Rep., March 9, 1889.

sufficient and non-representative retinal stimuli an effective sensation, and to form judgments that shall complete and compensate the misrepresenting image.

Severe labor tires, and the exhaustion of the cerebral mechanism is evidenced by sleepiness. I think 90 per cent. of the eye-strain patients will have the symptoms and wonder how you know about it.

On account of the duplication of symptoms and the indefiniteness both of diagnosis and result that necessarily attends such conditions, it will be understood that the figures of the table of reflex ocular neuroses can in some ways and parts have only a low relative value. But something is gained by grouping them together. Many of the symptoms were probably of extra-ocular origin. All that is implied in the grouping is that the symptoms were often, if not in the majority of cases, of ocular origin. Different classes vary in the certainty with which one may say that they *did* so arise, and many require time to explain my reasons for the ascription. Some are directly, others only secondarily due to the ocular irritation.

TABLE X.—REFLEX NEUROSES OF POSSIBLE OCULAR ORIGIN.

Symptom.	Cases.	Per Cent. of all Reflex N.	Per Cent. of Refrac. Cases.
Headaches, sundry types	833	66.7	58.1
Digestive and Assimilative Disorders	277	22.2	19.3
Mental Symptoms, Melancholia, Memory, etc.	8	. . .	. . .
Night Terrors, great Insomnia	33	2.7	2.3
Chorea, and Choreic Symptoms	15	1.2	1.
Morbid "Nervousness"	26	2.0	1.8
Trembling	11	. . .	. . .
"Blind Spells"	9	. . .	. . .
Anæsthesia	3	. . .	. . .
Menstrual Troubles	7	. . .	. . .
Odontalgia	1	. . .	. . .
Aphonia	1	. . .	. . .
Tinnitus Aurium	2	. . .	. . .
Sinking or Fainting Attacks	8	. . .	. . .
Stuttering	1	. . .	. . .
Localized Spots of Pain	6	. . .	. . .
Sundry	8	. . .	. . .
	1,249	. . .	87.1

TABLE XI.—HEADACHE.

Variety.	Cases.	Per Cent. of all Headache.	Per Cent. of all Refrac. Cases.
Frontal—Brows, Temple	524	63.	36.5
Sick-Headaches	73	9.	5.1
Severe "Neuralgia"	38	4.	2.7
Primarily Frontal, extending to Vertex	15	2.	1.0
Primarily Frontal, extending to Occiput	29	3.	2.0
Primarily Frontal, then diffused	34	4.	2.4
Vertex alone	12	2.	.8
Occiput alone	16	2.	1.1
Diffused or general	53	6.	3.7
Giddiness or dizziness	39	5.	2.7
Total	833	100.	58.0

The only overstatement is in the duplication of symptoms arising from the fact that often these patients have several of the symptoms. This overstatement, however, will but partially neutralize the understatement of failing, in the hurry of practice, to elicit or get down on paper the details of symptoms. I have had no Hahnemanian symptom, microscope or kaleidoscope, and I hope I value truth more than a specialist's special pleading.

As to headache, its significance is not recognized because its death-bringing power is so slowly operative, and because it finally employs other diseases to do its work. But it cannot be forgotten that if the brain is the highest seat and center of vital and regulative life, its paining must mean destructive or harmful activity for all the vital powers. Careful clinicians will assent to this. Furthermore, it must arouse the most sluggish, if it be also true that certainly three-fourths of all headache are due to eye-strain. If you think 90 per cent. I shall not disagree. I am quite sure that over 75 per cent. of all my patients have had headache, though I find but 58 per cent. reported in my table. What proportion have been cured, or so greatly benefited as to be called a cure? Certainly 95 per cent. or more. As to sick headache, I believe it due to eye-strain in 90 or 95 per cent. of cases. Compare the opinion of that veteran neurologist, Seguin.[2] Sometimes it is not quickly, sometimes not even at all curable after 30 or 40 years of habit and disordered function of the nervous system. Habit becomes structure in time. Function makes its tools and we call them organs. Swim long enough with your hand and you will surely be web-fingered by and by. But sometimes the system resists these changes and preserves the ability to throw off long habit very quickly. Let me cite the case of my friend, Dr. Larcier, of Bethlehem, Pa., aged 32. He had had sick headaches twice a week for over 20 years, each attack culminating in violent emesis, exhaustion and sleep, the whole attack lasting about 24 hours. Seven months ago I prescribed for him an one-half dioptric cylinder in the right eye and an one-fourth in the left, both at axes 90° Since then he has had three attacks, twice when he broke and was without his spectacles, and once from loss of sleep and over-eating. There is but one thing more strange than the fact, and that is incredulity as to all such facts. I wish to add that Dr. L. had also 5° of external insufficiency, which left uncorrected has fallen to 2°, where I hope it will remain.

By mental symptoms I mean not the indefinite and vague ones often affecting the disposition or character, as any worry or pain will do, but cases in which after many years or a lifetime of suffering caused by eye-strain, the mental moorings showed positive evidences of giving away, and melancholia, loss of memory, illogical acts, etc., became painfully apparent.

[2] Keating's Encyclopædia of the Diseases of Children.

I have only lately realized the direct agency of eye-strain in causing night-terrors, insomnia, or non-restful sleep, especially in children forced by ambition, parental pride or an outrageous school system. The profound disturbance of the central nervous system cannot be followed by restful sleep. The injury to its own mechanism must first be healed and equilibrium established there before the normal work, the repair and restoration of the waste and depletion of the peripheral organs can proceed. It is a sad error on the part of those who treat children's diseases to ignore this tremendous factor. The few cases I report are, I am sure, but a fraction of those from whom I failed to elicit the symptom. And how few such little patients reach the oculist in time! Almost without exception parents tell me the nightmare, movements and crying-out in the night soon disappeared after wearing the spectacles. To the same general cause I believe certain rare cases of nocturnal incontinence of urine may be traced. Two cases stopped after the ocular headaches were cured.

As to chorea, I know the smile of incredulity of the neurologists. The smile—not of disbelief—will be in their patients' faces when the prejudice melts away. All that I contend for is that in some cases eye-strain may be a cause, may be the cause. I agree that in the majority of cases it is not the cause. Hardly one of my patients was not better, and several, the worst ones, were cured. When the lenses are broken, the frames bent, or the refraction itself with growth has changed, the choreic movements speedily recommence. Sometimes, when only a coöperating cause, each of the dual or triple causes must be separately dealt with to effect a cure; but the ocular examination under a mydriatic must not be omitted.

I have had several cases of what I have called chorea of the heart, violent palpitation, caused very certainly by eye-strain, and cured by its relief.

I know nothing of epilepsy due to eye strain, except in one instance, that I believe will soon prove itself to be such, sufficient time not yet having elapsed to be dogmatic about it. The case under observation has been growing worse, all treatment utterly ineffective, the etiology wholly mysterious. If the man reads a little while there is violently spasmodic closure of the right eyelids, intense sleepiness, headache, etc. A more fiendish refraction error could hardly be invented:

R.+ sph. 0.62 D. ◯ cyl. 2.50 D., ax. 175°.

L.+ sph. 0.25 D.◯ cyl. 1.00 D., ax. 75°.

Extreme hyperæsthesia, exaggerated "nervousness," is a common and clearly-marked symptom of eye-strain. The patient, usually a girl or young woman, is restless, excitable, hysterical, easily frightened, has absurd "crying-fits," outbursts of violent anger, etc. With spectacles the change from all this is remarkable, and remarked by parents.

I have had a number of patients whose trembling and loss of steady control of the hands or head seemed connected with the nervous storm aroused by ocular work without proper glasses. During the ocular headache the trembling was far worse. "Blind spells" sometimes supervene in the crises, or just preceding them, of ophthalmic migraine and sick headache, and in these crises three patients have complained of great loss of feeling, a benumbing of the hands, arms, lips, etc.

Most of the menstrual abnormalities I have certainly traced to eye-strain are delayed institution of the menses, and amenorrhœa. In two cases the mothers of girls of 16 or 17 years, reported that the long-delayed flow came with a gush within a week or two after relief of eye-strain and its resultant headache.

One young man stuck to it that certain of his teeth always ached whenever he read a long time. I have reported a noteworthy case of stuttering and one of aphonia due to ocular irritation.

Some of the most curious cases I have had were instances of localized and persistent pain,—*e.g.*, a cold tender spot above the right ear, the size of a silver dollar; a swollen patch in front of one ear; a pain continuous for 2½ years in the back of the neck, made worse by reading, and disappearing in 24 hours after getting glasses; a severe pain in the back between the shoulders persisting for many years all the time. It disappeared within a day or two after proper spectacles were worn, was absent for three months, reappeared in 24 hours after glasses were broken, continued for the four days during which the lenses were being reground, and again vanished in a day when the repairing was complete. Has not returned during the past year.

TABLE XII.—DIGESTIVE AND ASSIMILATIVE DISORDERS.

Variety.	Cases.	Per Cent. of all Reflex N.	Per Cent. of Refrac. Cases.
Anorexia and Fickle Appetite	134	10.	9.3
Anorexia, alternating With Abnormal Appetite	8	1.	. . . . .
Inordinate Appetite always	1	. . . . .	. . . . .
Constipation	28	2.	2.
Dyspepsia	51	4.	3.5
Nausea and Enesis—not Sick-headache	38	3.	2.6
Car-sickness	17	2.	1.2
	277	22.	19.3

For a long time I have been begging my friends, the general practitioners, to heed the fact that digestion and assimilation may be directly and profoundly disordered by eye-strain. Nothing seems to me more true in medical science than this. I by no means claim that all the cases of my table were the sole result of eye-strain. I have never

had a patient who complained of car-sickness who [if returning to report] was not free from it after wearing glasses. Besides these and sick-headache cases the cases of nausea and vomiting connected with use of the eyes and relieved by "artificial emmetropia" are quite numerous. But by far the most important disorder of the digestive system due to eye-strain, is anorexia—sometimes alternating with excessive appetite. These case of anæmia and malnutrition are almost always young girls or young women, and my records show almost without exception that after relief of eye-strain, the appetite becomes more regular and strong, there is a gain in flesh, health, spirits etc. I am thoroughly convinced that typical cases of anæmia have finally drifted into hysteria and chronic invalidism, when, if taken early, a simple pair of proper spectacles would have brought and preserved health. It is thus, by reducing the general vitality or resisting power of the nervous and assimilative systems that to eye-strain may be indirectly due any type of general organic disease of disastrous consequence or fatal issue. The work of the naturally hyperopic eye, set to unused and impossible tasks by civilization, is directly or indirectly a prolific source of indescribable mischief. If the theory of evolution be true it follows that an organ slowly evolved during millions of years for a special task, distant vision, cannot, in a century or less, be made to different work without disorder and trouble. With one little artificial help, the whole disaster and trouble may be forefended. Just how these strange reflexes are brought about no one would be bumptious enough to pretend to say, since no one can tell why pain follows a pin-prick, or why a nutastatic orchitis may follow parotiditis. These symptoms and results of eye-strain are infinitely diverse, apparently illogical, wonderfully concealed and subtile. Every case is a rule unto itself, so that one can give few general laws to one learning the art. Refraction is a science and an art in intimate union and requires as much patience, delicacy of perception, fineness of judgment and discrimination as any scientific work in the world. In relation to it there are vast fields of inquiry the wisest have hardly begun to explore. The amount of human misery caused by those ocular defects is appalling, and if the prevention and relief of that misery be the motive of scientific medicine, no branch is more important or demands higher powers of mind than that of ophthalmology—and nine-tenths of modern ophthalmic practice consists of refraction!

DISCUSSION OF DR. GOULD'S PAPER.

DR. H. MOULTON asked Dr. Gould if in any of his cases he had seen the axis change after passing from under atropia. Said he had met such a case, the axis under atropia being 90° and without 110°.

DR. SAVAGE said there could be but two causes for the best meridian under and after atropia. He attributes the difference to deviation of the vertical axes of the eyes caused by the oblique muscles.

DR. G. W. ALDYN said if spasm of accommodation is to be regarded as a fiction, as implied by Dr. Gould, he desired him to explain how a change so great as the following could be accounted for:

O. D. + 2. ◯ — 3 cyl. horizontal = $\frac{20}{20}$, under atropine. O. D. + 5. ◯ + 3 cyl. vertical = $\frac{20}{20}$.

PAPILLOMA OF THE CORNEA, WITH REPORT OF A CASE.

Read in the Section of Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY S. C. AYRES, M.D.,
OF CINCINNATI, O.

It sounds somewhat contradictory to say that a papilloma can develop from a surface which is not naturally supplied with papillæ. At first it would seem impossible, but the vagaries of neoplasms are numerous, and this seems to be one of them.

Von Ziemssen, in *Ziemssen's Archives*, Vol. vii, in speaking of papillæ of the larynx, says:

"The development of papillary growths occurs not only off the mucous surface originally provided with papillæ, but, as is especially shown by Virchow (Krankhafte Geschwulste, 1, pp. 334 and following), also in regions where papillary structure of the mucous membrane is entirely lacking. The first step is the proliferation of the superficial connective tissue, the development of a little amorphous granular or homogeneous nodule, in which cells are not to be recognized until later. As the cells multiply, they gradually grow and put forth buds, just as is done by the preëxisting papillæ. The capillary loops of the papillæ are large; the surface of the neoplasm is covered with a thick layer of epithelial cells.

"The size and form of papillary tumors are very various. At first they represent little buttons or pegs; afterwards warty formations, as those representing a cock's comb; in case of luxuriant development, high growth similar to a berry, grape or cauliflower in form, which may partly or entirely fill the upper and middle, more rarely the laryngeal cavity."

Cornil and Ranvier say in relation to the development of papillomata, "that mucous papillomata generally spring from the villi or papillæ of the mucous membrane, but they form where there are no papillæ, for example, in the ventricles of the larynx." The minute phenomena of these hypertrophies and new formations have not

yet been followed very closely, but the analogy of their structure with that of inflammatory granulations, supports the supposition that their mode of formation is similar. They say further as to location, that we find papillomata seated upon nearly all parts of the cutaneous and mucous surface.

Dr. Sajou, in his work on Diseases of the Nose and Throat, says that "papillomata are wart-like growths occasionally found in the nasal cavities of young subjects. They are most frequently attached to the septum and to the inferior turbinated body. They vary in size from that of a lentil to that of a small chestnut, and present a very light brownish color, with an irregular corrugated surface."

In relation to papillomata of the larynx he says: "This class of growth does not present a characteristic appearance which enables a positive diagnosis to be made; they, however, possess certain properties in common which render an approximate recognition of the nature possible." They often present small round projections which cause them to be termed raspberry, mulberry, cauliflower, etc., because of their resemblance to them; they are usually located at the anterior portion of the larynx, and on the vocal bands near the anterior insertion.

Mackenzie, in his work on the Diseases of the Nose and Throat, says that papillomata are by far the most frequent of all benign growths of the larynx. He says also that papillomata are found in the nose, and are more common than is generally supposed.

Throughout the ophthalmic literature I see numerous reports of cancroid of the cornea. In the seventh volume of Graefe's Archives is a report by von Graefe of two cases of cancroid of the cornea which he scraped off, and which, from the description, resembled my case in its early stages, but it was composed of epithelial cells with a very little connective tissue. In the fourteenth volume of the same, Dr. Knapp reported two cases of cancroid of the cornea and limbus conjunctiva, but nothing is said of the microscopic appearance of the growths. Cases defined positively as papilloma are not very numerous in the literature at my command.

In the *Lyons Medical* for 1879, M. Gayet reports a case of papilloma of the cornea. It was seated on the left cornea of a man 67 years of age. The disease was two years in reaching its present size and had never caused much pain. It occupied four-fifths of the cornea and left only a small portion of the periphery free, vision being only lateral and reduced to $\frac{1}{60}$. The tumor, flat, and compressed by the action of the lids, was of a rose gray tint, and presented a characteristic appearance. Examined histologically it was demonstrated to be a papilloma to the exclusion of sarcoma and epithelioma. It was treated by a powder of alum dusted on its surface with a hair pencil and the result was surprising. It disappeared in the course of two months and there was a *restitutio ad integrum* of the cornea, and vision was increased to one-fourth. Berry, in his excellent work on the eye, in speaking of tumors of the conjunctiva, says, that of the non-malignant forms, perhaps the most common are papillomata. They usually occur as multiple excrescences from the conjunctiva at the inner angle of the eye in the region of the caruncle, but are found at the same time springing from the palpebral conjunctiva. These surfaces are often uneven and crenated, but may also be smooth.

Pollock in his work on Histology of the Eye, say that Sczokalsky has described a tumor arising from the limbus conjunctiva, in which the papillary processes composed of spindle shaped cells containing blood vessels, were covered with a stratified epithelial layer.

Alt examined a growth of the conjunctiva in which there were epithelial papillæ, amongst, and in the cells of which lay granules of pigment.

In the Transactions of the American Ophthalmological Society for 1879, Dr. Wm. F. Morris of Philadelphia reports a case of recurrent papilloma of the corneo-scleral junction. It was in the person of a man 56 years of age. It was about half in the sclera and half on the cornea, and the tip of the growth extended about to the center of the cornea. It was first dissected off and then cauterized. It returned and in five months the operation was repeated. It was then cauterized with nitric acid, and this time it was successful, there having been no return of it since.

At the meeting of the Ophthalmological Society of the United Kingdom, December 13, 1883, Mr. Anderson Critchett and Mr. Juler exhibited a case of papilloma of the conjunctiva. It had been first noticed when the patient was nine years old and she was now fourteen.

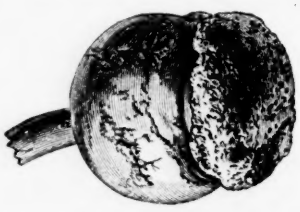
Schiess Gemeuseus observed a case of papillary excrescence on the conjunctiva of both lids in a young man 17 years old. It had a whitish rough surface. It had existed for about six months. In the cheek of the same side there was a lupus. The papilloma was treated by scrification and the use of silver nitrate in solution and astringent applications.

In the *Recueil d' Ophth.* Jules Fontan reports a case of adeno-papilloma of the conjunctiva.

H. C. Boenning, in the *Philadelphia Medical Times*, reports a case of hairy papilloma of the conjunctiva.

Ewetzky describes a case of papilloma of the cornea and conjunctiva in the person of a woman 50 years of age. It covered the entire cornea except a part of the outer and lower quadrant. Upwards and inwards from this tumor and about 2–3 mm. distant on the conjunctiva was another similar growth.

The case which I here present was in the person of Mrs. K. G., æt. 50, a healthy, well-nourished woman, who was seen first on the 7th of May, 1889. There was a large growth on the anterior portion of the left eye, involving the entire front of the ball. It had the appearance of a cauliflower, and its edges spread out beyond its attachment to the globe. It projected 1 cm. from the sclera, and its horizontal diameter is



3½ cm., and its vertical diameter 2 cm. Her history is as follows: She says that six years ago she noticed some veins extending from the outer portion of the ball inwards towards the cornea, where there was a slight elevation on the sclera. This continued to grow and enlarge until about two years ago, at which time it was about as large as a small hazel nut. It was then removed by her physician, but it grew very rapidly, and he removed a portion of it every week or two. He kept up this method of treatment for about six months, when he discontinued it. The tumor was allowed to grow unchecked until August, 1887. At that time it had grown to the size of a large hazel nut, and protruded between the lids. It seems, however, that up to this time it had not encroached very far on the cornea, as she says she could still see very well. In August and September, 1887, it was operated on several times, a small portion being cut away each time. Since then it has been allowed to grow unchecked by any surgical interference (a period of twenty months), until it has assumed the proportions I have given above. There is no history of cancer in the family, and it has not been accompanied by any pains which might be indicative of a malignant growth. It annoys her by its immense size, and the consequent exposure of its surface to the air, as the lids do not completely cover it. I advised enucleation, as the eye was very unsightly, and there was no possibility of restoring any vision. To this she readily consented, and the globe was enucleated without much difficulty in the ordinary way. She made a rapid recovery, and since then, now two years, there has been no return of the growth. The specimen was examined for me by Dr. James M. French, who gave the following report:

The specimen from the eye of Mrs. G., which you recently gave me for examination, proves to be a papilloma. Its structure consists of exceedingly delicate papillæ, which appear to spring from almost the entire anterior surface of the cornea. I have not yet been able to make an altogether satisfactory section of it, but I think that the growth must have originated from the conjunctiva, and that its presence upon the cornea is only an extension of the tumor upon its surface; for I cannot conceive of the possibility of a papillary growth originating from a tissue like the cornea. I cannot state positively that

the connective tissue of the central portion of the papillæ is, or is not, directly continuous with the corneal tissues, but such appears to be the case, the cornea having become vascular.

The only interesting feature, microscopically, of the tumor, aside from that to which I have just referred, is the very long, slender and delicate character of the papillæ, which appear to be primary.

I have not yet been able to find any secondary off shoots, and if any are present, they originated at, or very near to, the apices of the primary papillæ. The central fibrous framework of the papillæ is very delicate, and supports little more than a single layer of columnar epithelial cells, without a well-marked corneous layer. The tumor was, of course, benign in character.

In this case there seems to have been no doubt as to the microscopic structure of the growth, its distinctive histological characteristics being beyond doubt. I regret I am not able to present to you more confirmatory reports of parallel cases.

EXCISION OF DISEASED EYEBALL, FOLLOWED BY RELIEF OF REFLEX CEREBRAL SYMPTOMS.

Read in the Section on Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY H. MOULTON, M.D.,

OF FORT SMITH, ARK.

CONSULTING SURGEON TO THE EYE AND EAR DEPARTMENT, ST. JOHN'S HOSPITAL.

The following case seems rather unique, hence is reported:

Mr. R., æt. 40, single, and a farmer, was sent to me May 19, 1890, by Dr. Thomas, of Booneville, Ark. When 6 years old, some lye thrown into his right eye had destroyed its sight. The eye then gave no special trouble until twenty years afterwards, when it became inflamed and ruptured, discharging the lens and part of the vitreous. During the past twelve years it has

been subject to occasional attacks of pain, mild at first, but becoming more severe and of greater frequency. For a year or more the patient has suffered from almost constant frontal headache. During the past eight months, insomnia and symptoms of mental aberration were added. The mental trouble assumed the form of melancholy. The patient became suspicious of his friends, fearing bodily and other injury at their hands, and attempted on several occasions to leave his home. At the date of his appearance in my office, the right eyeball was merely a small, hard, shrunken cicatricial button, tender to the touch. V. L. E., $\frac{20}{40} + 1.20 = \frac{20}{20}$. Under cocaine, the right eye was enucleated May 20. The patient reported the first sound night's sleep for many months. He was free from headache, and felt more cheerful and better in every way. This improvement was lasting, and he became himself again, following, during the next summer and winter, his usual avocation. It seems his headache, insomnia and melancholia must have been aggravated, if not caused in a reflex way, by *cicatricial* compression of the terminals of the nerves supplying the eyeball, producing cerebral vascular disturbances. Reflexes arising in a similar way are mentioned[1] but rarely.

I have just learned that the patient's friends have some fear of a return of his melancholy. Should this eventually prove true, it yet seems, from the great improvement following the operation, that the relation of cause and effect, as above premised, must have existed.

DISCUSSION.

DR. EDWARD JACKSON said he once enucleated an eye in a patient in whom there was mental aberration, which he attributed to fear.

DR. C. A. WOOD called attention to the fact that many cases of temporary insanity are relieved by the operation, but recurrences are liable to occur. He thinks insanity may be anticipated in such cases.

DR. FROTHINGHAM said that in connection with this case reported by Dr. Moulton, he wished to mention a case in which he had removed two painful stumps of eyes from a young lady for the relief of intense headaches that seemed due to the irritation which they caused. The headache was the trouble from which the young lady sought relief, and it was permanently cured by the operation.

THE sum of $30,000 has been collected for the establishment of a children's hospital in Louisville, Ky., in commemoration of the destructive tornado which some time ago passed over that city. This is a very literal translation of the old proverb, "It is an ill wind that blows nobody good."

[1] Internat. Encyc. Surg., Vol. v, p. 210.

TREATMENT OF IRIDO-DIALYSIS FROM CONTUSION. PARTIAL IRIDENKEISIS, WITH OR WITHOUT SUTURE.

Read in the Section on Ophthalmology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY EUGENE SMITH, M.D.,

PROF. OF OPHTHALMOLOGY AND OTOLOGY DETROIT COLLEGE OF MEDICINE.

Among the anomalies of ophthalmology is the condition known as irido-dialysis from contusion. Anomalous, because, while well known to all ophthalmologists, described in all ophthalmic works of importance, and its discomforts fully recognized, no treatment is advised or even suggested.

That treatment is unimportant in the lesser degrees of the trouble, "goes without saying;" but in cases where the separation of the periphery of the iris is one-fourth of its circumference, and the accommodation normal, as occasionally happens, the dazzling and monocular diplopia is extremely annoying. This is particularly the case when the detachment is situated at the inner, the outer, or the lower periphery.

The segment of iris torn from its peripheral attachment becomes paralyzed, and later on, atrophied.

Many years ago Critchett gave us the operation of iridodesis, which Stellwag, Wecker and others have modified, and the operation which I have found so successful is a yet further modification of Critchett's, or rather, of the iridenkleisis of Stellwag, with this difference, the whole width of the iris from the pupillary border to the detached periphery is not dragged into the wound at the sclero-corneal junction.

With these few remarks I will ask your consideration of a method of treating these cases which I have employed four times in the past five years, which in each case has been successful, and which, as yet, has been followed with no untoward results.

My operation is as follows: A narrow, somewhat slanting incision is made in the cornea near the sclero-corneal junction with a broad needle or a very small keratome. Fine forceps are introduced and the iris near its detached periphery is seized and drawn into the wound. A small portion only is drawn through the wound, enough only to insure being held in position by a compress bandage till healing has taken place. In order to more thoroughly secure its maintenance in the wound a fine suture may be passed through the conjunctiva at the border of the wound and the iris stitched thereto. The suture may be removed in 48 hours. In three of my cases the operation was made as described without suture.

The fourth case was quite extensive, the rupture measuring 10 mm. long and 4 mm. wide.

In this case I made a double incision, the two incisions being about 4 mm. apart, and I drew a bit of iris into each wound. I did this because a single antero peripheral adhesion of the iris would be insufficient to cover the peripheral rupture.

The case recovered without untoward symptoms and was perfectly well 7 months later, at which time I last saw him.

Objection to the operation may be offered on the plea of possible sympathetic mischief from dragging, but as the operative procedure does not restore the ruptured nervous connection this danger is problematical, if not chimerical.

DISCUSSION.

DR. G. W. ALLYN, Pittsburgh: A man 47 years of age who had lost his right eye by a former accident came for treatment of his left and only useful eye.

A fragment of steel had struck the center of the cornea a glancing blow, cutting outward and well into sclera. Through this wound a ribbon of the iris detached from the outer third of its attachment protruded as a loop. Hoping to preserve a central pupil I carefully cut the protruding iris, leaving the ends in the wound. The eye healed in time. When ready to resume his work a glass correcting the astigmatism gave a vision of $\frac{20}{20}$.

At the end of one year I find the astigmatism less and the vision unimpaired for all of his work, parts of which are very exacting.

SECTION OF STATE MEDICINE, 1891.

Chairman, J. D. Plunkett, Nashville, Tenn. Secretary, Benj. Lee, Philadelphia, Pa.

FIRST DAY.

The Section met at the Columbian University, Washington, D. C., at 3 P.M. There were present and registered during the session

John H. Rauch, Springfield, Ill.
N. S. Davis, Chicago, Ill.
A. N. Bell, Brooklyn, New York.
J. B. Lindsley, Tennessee.
C. G. Comegys, Cincinnati, O.
Charles McIntyre, Pensylvania.
M. G. Motter, Lancaster, O.
G. H. Rohé, Baltimore, Md.
J. Harvey Reed, Mansfield, O.
Gustavus F. Franklin, Chillicothe, O.
D. F. Lincoln, Geneva, New York.
W. Wyman, U. S. M.-H. S.
T. A. Foster, Portland, Me.
C. W. Chancellor, Baltimore, Md.
C. A. Lindsley, New Haven, Conn.
Benj. Lee, Philadelphia, Pa.
A. L. Gihon, U. S. Navy, Brooklyn, New York.
J. T. Reeve, Appleton, Wis.
J. Bochran, Montgomery, Ala.
C. O. Probst, Columbus, O.
J. N. McCormack, Bowling Green, Ky.
G. S. Franklin, Ohio.
J. F. Hibberd, Richmond, Ind.
J. T. Motter, Georgetown, D. C.
Charles H. Shepard, Brooklyn, New York.
B. O. Reynolds, Lake Geneva, Wis.
W. C. Briscoe, Washington, D. C.
H. F. Lyster, Detroit, Mich.
J. H. Hamilton, Richford, Vt.
D. J. Jennings, Cleveland, O.
E. A. Gibbs, Washington, D. C.
Geo. Purviance, U. S. M.-H. S.
D. Sinste.
Geo. Homan, St. Louis, Mo.
John H. Fulmer, Quakertown, Penn.
Frank Ball, Lock Haven, Penn.
A. P. Hull, Montgomery, Penn.
Geo. W. Jenkins, Kilbourne City, Wis.
Lawrence F. Flick, Philadelphia, Penn.
Robert Selden, Catskill, New York.
H. W. Thayer, Corry, Penn.
O. F. Shelden, Lyons, New York.

In the absence of the chairman, Dr. J. D. Plunkett, Dr. John H. Rauch, was, on motion of Dr. J. Berrien Lindsley, called to the chair.

The address of the chairman being necessarily passed over the report of the Committee on School Hygiene was read by Dr. D. F. Lincoln, Chairman of the Committee. Dr. Lincoln prefaced his report by the statement that it was mainly synoptical and presented only such results as all the members had been able to agree upon. Several of the members of the committee had prepared papers on the special subdivisions of the general subject which had been assigned them respectively, and were present to read them as supplementary to the report.

At the conclusion of the reading of the report, Dr. Lincoln presented a paper entitled "Remarks on the Construction of School Houses."

The report and paper were declared open for discussion.

Dr. Gihon assented to the propositions laid down by Dr. Lincoln in the main. He considered the reference of the speaker to the hygienic defects of the hall in which the meeting was in session, especially well timed. This was a building of modern construction, erected at a lavish expense for the express purpose of a class or school room, and yet as had been pointed out, its lighting was execrable, and as he had discovered during the reading of the paper its acoustic properties were still worse. With reference to the strictures passed upon natural ventilation, *i.e.*, by means of windows, he was not so thoroughly convinced. He had when in charge of a Naval School adopted the expedient of placing a four inch board under the edge of the lower sash, thus allowing an upward current of air to enter at the junction of the upper and lower sashes, and had found that ventilation could be quite satisfactorily secured in this way without creating dangerous drafts. It was objected to this that it only furnished a means for introducing fresh air and did not provide for the escape of the foul air.

Dr. R. Harvey Reed replied that actual obser-

vation of an opening created in this way, showed that there was an alternation of inward and outward currents. The air would enter for a few moments and then pass out for a similar length of time.

He considered that the foul odor noticed on entering an ill-ventilated school room was not in any sense dependent upon or to be taken as a measure of the amount of carbon dioxide in the air of the room. It depended on sulphuretted hydrogen, carburetted hydrogen and organic filth resulting from perspiration and respiration.

Dr. M. G. Motter, of Lancaster, Pa., suggested that, in the same way that ventilation could be obtained by the four inch board under the sash, it could also be obtained by having two panes of glass so adjusted on an ordinary sash that the air could pass freely in and out between them. He inquired whether inspection of schools was not a proper function of the Health Commissioner of a city.

Dr. C. A. Lindsley held that even though the air from a window raised with the four inch board entered with an upward direction, its density compelled it to fall upon the heads of those near the window before admixture with the general air of the room.

Dr. McIntire agreed with Dr. Reed that the odor of the room in no way depended upon the presence of carbon dioxide, but upon the organic impurities, and that on the other hand the amount of carbon dioxide present, could not be accepted as a test of the impurity of the air.

Dr. Lincoln remarked, in reply, that undoubtedly emanations of various kinds and of all kinds from the human body contributed to the foulness of the atmosphere of a school room, but that where carbon dioxide was found in excess, as a product of respiration, it indicated necessarily the presence of other impurities, also products of respiration and other excretory processes which are extremely difficult to detect and to determine. The value of the determination of the percentage carbon of dioxide, therefore, was that of a general indicator of impurity.

Dr. Chancellor considered it of quite as much importance to provide special means for the expulsion or exhaustion of the foul air, as for the introduction of the fresh. Two bodies cannot occupy the same space at the same time. Unless the foul air is first removed, the fresh air cannot enter. In cold weather the pure air should be introduced warm; the outer air at a freezing temperature should not be brought in.

The difficulty of obtaining a pure outer air in crowded centres of population is not sufficiently appreciated. In these days of rapid transit why should we not establish our public schools in suburban districts, where there is an abundance of pure air, and furnish proper facilities for the pupils to reach them.

Dr. Lincoln pointed out the extensive character of the work assigned the committee, stated that it did not by any means consider that it had yet accomplished this work, and in the name of the committee requested its continuance.

On motion, this request was unanimously acceded to.

The committee thereupon continues as follows, to report next year:

Committee on School Hygiene.—D. F. Lincoln, Geneva, N. Y., Chairman; Geo. H. Rohé, Baltimore, Md.; J. G. Pinkham, Lynn, Mass.; W. L. Schenck, Osage City, Kansas; R. Harvey Reed, Mansfield, Ohio.

Dr. Rauch requesting to be excused from the duties of the chair, Dr. A. H. Gihon was, on motion, called to its occupancy.

Dr. Gihon inquired whether the roll of the Committee on State Medicine had been called, and stated that it had been customary to do so. The roll was therefore called, and it was found that but five members out of forty-two (two of the committee being deceased) had registered in this Section. Further discussion of the subject was deferred until after the reading of the papers.

Dr. R. Harvey Reed of Ohio then read his paper entitled "Original Investigations on the Heating and Ventilation of School Buildings." This paper was accompanied by the exhibition of a large number of charts illustrating the following points from actual and accurate observation:

1. Date and time of day inspection.
2. Name of building and room.
3. Number of cubic feet of air in room.
4. Number of pupils present.
5. Outside temperature.
6. Temperature of room at levels of head, feet and ceiling.
7. Humidity outside.
8. Humidity in room at levels of head, feet and ceiling.
9. Kind of heating apparatus in use.
10. System of ventilation employed.
11. Number of cubic feet of fresh air supplied and of foul air discharged per hour.
12. Estimation of amount of carbon monoxide present in the air of the room.
13. Estimation of the amount of carbon dioxide present in the air of the room.
14. Consideration of the amount of organic matter present in the air of the room.
15. Bacteriological examination of the air of the room.
16. Miscellaneous remarks and suggestions.
17. Conclusions.

The paper of Dr. Geo. H. Rohé, member of the Committee on School Hygiene, was then read by the author, the title being "The School Sanitary Inspector; His Qualifications, His Duties, and His Powers."

The paper of Dr. W. L. Schenck, a member of

the same committee, on "The Personal Hygiene of School Children," was next in order. In the absence of the author, the secretary read an abstract of the paper which had been prepared by the Chairman of the Committee, Dr. D. F. Lincoln. The subjects embraced were Physical Training, Study, Time and Amount; Recess and Location, Instruction in Hygiene, by Whom and How to be Taught, and the Prevention of Contagious Diseases.

The Secretary read a telegram from Dr. Octavius A. White, who had been announced to open the discussion on this subject, stating that illness prevented his presence. Dr. Gihon therefore called upon Dr. N. S. Davis, as the oldest member of the Section, to take his place.

Dr. Davis spoke in terms of high commendation of the industry displayed in the preparation of the report and the various supplementary papers, especially the tabular work of Dr. Reed's paper.

The period of childhood was certainly that in which the greatest results could be accomplished by proper hygienic influences. Could we have such influences in active operation in school as well as at home, it is not too much to hope that nearly all of the defects which we call hereditary could be eliminated from our people in the course of a few generations. It should be the especial duty of the physicians to instruct the heads of families in which he is the medical adviser in the laws of health, especially as regards growing children.

Dr. Cochran being called upon, said that he had listened with amazement to the proposed qualifications for school inspectors. Certainly it would be a long time before it would be possible to inaugurate such a system in his part of the country. He could only express his gratification at what had already been accomplished by the gentlemen who had read the papers.

Dr. Hibberd described the condition of the country school house of his early days, in which lack of sufficient introduction of fresh air was not a noticeable feature.

Dr. Lyster, of the Michigan State Board of Health, spoke with regard to that portion of Dr. Reed's paper which referred to the Smead system approvingly. His board had been deeply interested in the study of that system in numerous educational buildings in their State. So far as it was associated with a process for dessicating fæces, they had been compelled to report adversely upon it. When disconnected with any such process, and used simply for the introduction of pure warm air and the exhaustion of impure air it certainly worked admirably.

Dr. McCormack, Secretary of the State Board of Health of Kentucky, while deeply interested in so much of the papers as he had been fortunate enough to hear, and commending their purpose, coming as he did from a Western State, felt that the suggestions were many of them such as could only be successfully carried out in the land which we name Utopia.

He moved that the reports and papers be referred to the Association and the committee continued. It was carried.

Dr. McCormack stated that a resolution was passed in the Association at the morning's session, calling upon each Section to appoint a committee to confer with similar committees from the other Sections to consider the subject of perfecting the organization and improving the work of the Sections.

He therefore moved that the chair appoint a committee of three for this purpose.

The motion was carried and the chair appointed Drs. R. Harvey Reed, A. N. Bell and J. T. Reeve as such committee.

The Section then, on motion, adjourned to meet at the same place on Wednesday, May 6th, at 3 P. M.

SECOND DAY.

The Section convened at 3 P. M., May 6, 1891, pursuant to adjournment.

Dr. J. Berrien Lindsley of Nashville, Tenn., the oldest ex-chairman present, was, on motion, called to the chair.

Dr. N. S. Davis of Chicago, Ill., then presented his report as chairman of the Committee on "Meteorological Conditions of the Atmosphere and Their Relations to Coincident Prevalence of Disease." The report was founded on an immense number of careful meteorological observations, and sanitary and mortuary returns, showing much faithful and persevering labor. It drew attention to the apparent influence of the presence of ozone and peroxide of hydrogen in the atmosphere in diminishing the amount of albumenoid impurities. The alternate prevalence of typhoid fever and pneumonia was adduced in favor of this theory. A considerable portion of the report was devoted to the consideration of the influence of the presence of epidemic influenza, in increasing the frequency of many other diseases, such especially as pneumonia, acute bronchitis, typhoid fever and diarrhœal affections.

The report was listened to with deep interest. Discussion being called for, Dr. Flick, of Pennsylvania, considered that a serious source of error existed in all our statistics of influenza, from the fact that many cases of pneumonic complications were reported as pneumonia, which, when the symptoms were carefully sifted, could not be maintained to be so. It was a special condition peculiar to influenza, in which localized foci of inflammation were found distributed throughout the lung tissue. The same might be said of the diarrhœal complications. Strictly, all of these cases should have been returned as influenza.

Dr. Farrington, of Ireland, who was present

by invitation, drew attention to the somewhat remarkable fact, that the statistics of influenza in his country showed that this disease made its appearance with them at about the same time that the earlier cases were reported in America.

Dr. Davis was fully aware of the errors liable to creep in from false diagnosis, as referred to by Dr. Flick. These liabilities, however, existed at all times and in all places. They were not confined to times of epidemic or to certain cities. His own impression was very strong that, during the prevalence of an epidemic, and especially one of such an affection as influenza, which manifested itself in so many different ways, the danger was rather that other affections should be falsely designated as cases of the prevailing disease which was uppermost in every mind, than the reverse. The same remarkable simultaneousness of appearance observed by the gentleman from Ireland, on the two sides of the Atlantic, was observable in different sections of our own country.

In conclusion, Dr. Davis requested to be excused from a further continuance of the self-imposed labor which he undertook at the meeting at Newport, in the preparation each year of this report, feeling that his declining years and strength would not permit him to devote the necessary time and energy to it. The Secretary remarked that whatever of physical abatement of force and diminished elasticity the reader of the report might be personally conscious of, these conditions had certainly not in the slightest degree reached his mental vigor. He had been in doubt whether most to admire the great value of the report or the amount of labor which had been expended in its preparation. It was, however, due to Dr. Davis that his request should be granted, and in seconding it, he also wished to move a special vote of thanks to that gentleman for his services in connection with the Section. The motion was carried. Dr. Davis feelingly acknowledged the compliment, and proceeded to sketch briefly, for the benefit of those who should take up the work of the committee, the lines on which it had been prepared to carry on these observations. The different agencies on which he had relied for information were:

First. The United States Signal Service Observers, at such points as it had been deemed advisable to obtain data, for the meteorological observations which they are by law required to make.

Second. Other scientific observers, official or voluntary, for determinations of ozone and peroxide of hydrogen at or near the same points.

Third. Chemists, who could be relied upon for examinations of the atmosphere for organic impurities, at the same stations and

Fourth. Physicians, who were called upon to make returns of all cases of acute disease occurring in their own practice, in the neighborhood of these stations.

He regretted to be compelled to say that, while the Signal Service officers were perfectly ready to give all the assistance in their power, and scientific voluntary observers were also to be depended on, and a chemist could occasionally be found who was willing to devote attention to the subject, the physicians could not be aroused to a sense of the importance of the subject, or to give the slightest assistance.

Dr. Hibberd suggested that it would facilitate the work of the Section in this respect if Dr. Davis would kindly name his own successor in the work, and a motion was passed requesting him to do so, at his convenience.

In the absence of the author, Dr. C. A. Lindsley read the paper of Dr. Joseph R. Smith, Colonel and Surgeon U. S. Army, Medical Director Department of Arizona, entitled "Sickness and Mortality in the Army of the United States."

Dr. A. N. Bell, of Brooklyn, then read his paper on "The Beneficence of Disease."

A paper on "The Sanitary and Unsanitary Relations of Underground Waters" was next read by Dr. Peter H. Bryce, of Toronto.

Dr. Lawrence F. Flick, of Philadelphia, followed with a paper on "The Duty of the Government in the Prevention of Tuberculosis."

Opportunity for the discussion of these valuable papers, which were listened to with great interest, was prevented by the fact that it was necessary to vacate the room by a certain hour.

Election of officers for the ensuing year being now in order:

Dr. Bell nominated Dr. Benjamin Lee, of Philadelphia, as Chairman.

There being no other nomination, a *viva voce* vote was taken, and Dr. Lee was announced as elected.

Dr. Hibberd nominated Dr. Lawrence Flick, of Philadelphia, as Secretary.

There being no other nomination, a *viva voce* vote was taken, and Dr. Flick was announced as elected.

On motion of Dr. Bell, it was resolved, that the Chairman and Secretary elect be a committee to nominate the members of the Committee on State Medicine, and be instructed to send the list of the names to the Secretary of the Association.

The Section then, on motion, adjourned to meet at the same place at 3 P.M., May 7, 1891.

BENJ. LEE, SEC'Y.

THIRD DAY.

The Section met, pursuant to adjournment, at 3 P.M., May 7, 1891.

Dr. J. Berrien Lindsley was called to the chair. The Secretary announced that he had received a telegram from Dr. J. D. Plunkett, the Chairman

of the Section, stating that he had been detained by the sudden illness of his wife, and regretted that he would be unable to be present.

Dr. A. N. Bell moved that the Secretary be instructed to express to Dr. Plunkett the regrets of the Section at his absence, and to request him to forward at once a copy of his address for publication. It was carried.

Dr. H. O. Marcy being compelled to read a paper in another Section, his paper was substituted for the first paper on the programme, the author of which was absent. Dr. Marcy read his paper on "The Coroner System in the United States."

The paper of Dr. George M. Sternberg, Lieut.-Col. and Surgeon U. S. Army, on the "Disinfection of Excreta," was read, in the absence of the author, by Dr. Peter H. Bryce, of Ontario.

Dr. C. W. Chancellor, Secretary of the State Board of Health of Maryland, then read a paper on "Simple Methods of Sewage Disposal," accompanied by the presentation of a model apparatus for the purpose of use in suburban residences.

The Secretary read a letter from Dr. Robert C. Davis, member of the Board of Health of the City of New York, stating that owing to illness, he regretted to be unable to be present to open the discussion on these papers, as announced.

Discussion being invited, Dr. Lyster, of the Michigan State Board of Health, remarked on the fact of the necessity of some definite action on the part of the Section for the protection of water supplies, both in wells and rivers, from the sources of pollution referred to in Dr. Chancellor's paper. He thought we should put ourselves on record as utterly condemning the use of the ordinary unprotected privy vault.

Dr. Bryce, while greatly interested in the manner in which Dr. Chancellor has sketched the different methods of sewage disposal, and in the method proposed for dealing with it in small quantities, which he could see might work very fully for separate houses, confessed that he had been disappointed in the want of success attributed by the reader of the paper to systems of sewage irrigation. Water carriage has such a vast advantage over all other systems in convenience, and in cleanliness, and in inoffensiveness about the residence or building, and with good modern plumbing may be made so perfectly safe to the occupants of the house, that we are practically compelled to accept it for all towns of any size.

It had been demonstrated that the separate system could be introduced for a town of 5,000 inhabitants, at a cost of from $7,000 to $9,000 per mile, with all necessary appliances for flushing automatically. The question of expense, therefore, is met. The only question is, in cases where there is not a large river with a strong current, what to do with the effluent. It did seem to him that Dr. Chancellor had overstated the difficulties attendant upon treating this by irrigation. As an instance of how readily this might be done, he referred to the system in use by the London Hospital in Ontario. The entire plant, from beginning to end, cost only $25,000, and it sufficed for the necessities of a population of 1,200 people. The separate system was adopted. The irrigation farm was only four acres in extent. One-third of this surface was used every day, so that each portion had two days of rest. The effluent flowed on to it, so thoroughly mixed by its rapid passage through the pipes, that it was absolutely fluid and lelt only a thin film on the surface, which when dry was raked in by a laborer. There had never been the slightest offensive odor from it, and chemical tests indicated complete nitrification of all the organic filth.

Dr. Chancellor, in closing the discussion, said that Dr. Bryce had evidently misunderstood him, as regarded the intent of his paper, which was not intended to take up the discussion of large systems of sewerage, but only of devices, where large systems are not available. His figures on the expensiveness of irrigation were with references to places in which it was absolutely necessary to prepare the ground by an elaborate system of double under drains. Very few places were so fortunately situated as London with its natural filter bed of sand close at hand. And even then he feared that in a few years it would be necessary for them to take in new ground for the purpose. This had been the experience in Berlin and other Continental cities. In regard to the purification of infected wells, he had often been able to accomplish it by having a quantity of chloride of lime placed in the well, allowed to remain a few hours, and the well then pumped out completely. By repeating this process two or three times, the water could often be completely purified. Of course, when it was practicable, he preferred to have such a well abandoned.

The next and last paper of the programme was read by Dr. G. W. Jenkins, of Kilbourne City, Wisconsin, under the title "Hygiene in the Rural Districts."

The suggestion contained in the paper that physicians could do much to improve the hygienic conditions in rural districts, by forming social clubs, which should meet from house to house, and before which demonstrations of truths familiar to hygienists, which would interest and impress the minds of the people, was considered a practical and valuable one by Drs. Lee, Lyster and other members.

The section was then declared adjourned, to meet at the time and place determined upon by the Association, in the year 1892.

BENJ. LEE, *Secretary.*

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SATURDAY, SEPTEMBER 19, 1891.

HOW SHALL MEDICINE BE TAUGHT?

As the time for the opening of the colleges approaches, the methods of teaching again present themselves for discussion. Shall the teaching be by lectures, or recitations, or some other method?

By the recitation method the contents of a text-book can be very thoroughly learned by the student; the exact meaning of the language employed can be made clear. A text-book, to be of special advantage, must be accepted in its entirety, or practically so. All successful teaching is dogmatic. If the teacher lectures he may be dogmatic, but if he uses a text-book, he must surrender his dogmatism, his position as master, to the text-book, for there cannot be two masters in the same house. To use a text-book, and then make frequent additions to the text, or differ from it frequently, can only introduce confusion. The recitation method of teaching then necessitates the use of a text-book which can be accepted by the teacher as complete, explicit, and reliable. In what branches of medicine is it possible to find such text-books? In anatomy suitable works are available. Let us take GRAY. Now, where shall we find the genius who can quiz a class of 40 men through GRAY in 40 or even 60 hours? Assuredly the work would be much more superficially done than if even a mediocre lecturer had spent the time with the class. In a recitation much time is necessarily lost in asking questions, explaining questions, and receiving slow responses, and much more is often aggravatingly lost in idle discussions of unimportant points, which cannot be altogether avoided. The recitation method is slow. On the other hand, the properly-trained lecturer studies for his class, and by doing the work for a hundred men becomes a time-saver and labor-saver of the greatest importance. A text-book in physiology might be found in LANDOIS, FOSTER, or even YEO'S manual. The science of chemistry is so far advanced, is so accurate, and free from theories, that it might be taught from a text-book, instead of by lectures. But there is not a book on medical chemistry which will answer the purpose.

If the practical branches are considered, just two will be found so far developed and reduced to such definite conditions as to admit of instruction by text-books, and these two are obstetrics and ophthalmology. The principles of surgery and general pathology might with advantage be taught from a book, but not so the practice of surgery, the practice of medicine, or gynæcology. For the practice of medicine not a single text-book can be found to which a conscientious teacher would be willing to limit his class. Short, bare statement of great facts may be sufficient for one who has read widely, but they are barren to the student.

In the important matter of etiology, all our text-books are strangely deficient, and in that special branch of etiology, bacteriology, no text-book can keep up with the times.

The text-book is a voice from the dead. It is lifeless and can never be made to take the place of those great teachers, who through their individuality, have impressed, not themselves, but the great truths of medicine on the minds of their hearers, and imparted new life to them. Imagine MEIGS, FLINT, DALTON or GROSS with text books in hand! The practical branches of medicine contain too much of the art to be successfully relegated to books for elucidation.

Medical education should aim to do more than merely implant facts. Medical culture is needed. A culture which shall enable the student and practitioner to take comprehensive views, to think broadly, to give to opinions and statements a proper weight, to realize the inherent deficien-

cies of his own information, to possess a frame of mind which is capable of receiving new discoveries. In such a scheme of education, the text-book plays a most pernicious part. It is essentially narrowing, and conducive to a condition of shallow bigotry. Much more culture can be imparted by a lecturer who is himself the possessor of broad views. The great field of medical literature should be thrown open to the student and he should be taught how to cultivate it. The many views of many minds is the great corrective of narrowness.

Aside from the question of text-books or lectures, there is another great branch of medical teaching which bids fair to come so far to the front as to throw completely in the background this other question.

The objective method of teaching medicine has made great strides lately, and is bound to become more and more prominent. To learn anatomy without dissecting is impossible. Physiology should never be taught without the aid of a laboratory to illustrate, at least, fundamental truths, and chemistry cannot be taught without a laboratory. To acquire an accurate knowledge of normal and morbid histology without the microscope is impossible. The same is true of bacteriology.

In the practical branches the objective method is gaining ground. Clinical instruction is the best instruction in these branches. If clinical material were sufficiently abundant to enable the diseases of the several organs to be presented systematically to students in the shape of clinical examples, it would be the ideal plan of teaching. In its absence, the didactic lecture must still be the means of systematic instruction, while the clinic avails for illustration. After all, the didactic lecture is much like a composite picture, the resultant of many details representing the same general condition, and not exactly resembling any of the individuals who have given origin to it And like the composite picture the didactic lecture is most intelligible tc those who are familiar with the originals. The importance of clinical teaching grows apace with improved methods of diagnosis and treatment. Refinements of diagnosis require illustration to make them understood. The existence and flourishing condition of the post-graduate schools for clinical instruction speak louder than all else for more and better clinical instruction by our undergraduate schools.

In the efforts to improve medical education, it should not be forgotten that the prime object of the schools is, or should be, to supply the community with capable, working physicians, and this cannot be accomplished without proper clinical teaching.

IS INEBRIETY A VICE OR A DISEASE?

The attempt to study scientifically the various departures of mankind from the rule of right living, brings up many interesting and difficult questions. When we no longer rest content with the simple fact of the choice of evil rather than good, but seek to know why such a choice is made, the boundaries between vice and disease no longer seem so fixed and definite as they were formerly thought to be. Especially is this true in regard to the subject under consideration. Very few, probably, who have studied the phenomena of drunkenness thoroughly and candidly, look upon the confirmed drunkard as merely the slave of a bad habit. There can be no doubt that the long-continued abuse of alcohol brings about a diseased condition which aggravates the craving for the poison that caused it, and impairs the patient's power of self-control. So far, the question presents little difficulty, and there are probably few in the ranks of the medical profession, at least, who would not agree to the proposition that every drunkard is a diseased person.

When, however, we come to inquire how this diseased condition came about, the question is no longer so simple. Evidence is constantly accumulating that the practice of excessive indulgence in alcohol may itself, in its inception, be a symptom of disease, and the question has now come to be not as to the possibility of such a state of affairs, but as to its frequency.

The *North American Review* for September contains a discussion of the question "Is Drunkenness Curable?" by DRS. W. A. HAMMOND, T. N. CROTHERS, E. N. CARPENTER and CYRUS EDSON, which illustrates, to some extent, the divergence of views on this point. DR. HAMMOND dwells, almost exclusively, on the influence of habit and opportunity in the making of drunkards. DR. CROTHERS attributes over 60 per cent. of cases of inebriety to heredity, 20 per cent. to disease or injury preceding the use of spirits, 10 per cent. to brain and nerve exhaus-

tion, 5 per cent. to bad sanitary conditions, and says that "in a small percentage the causes are obscure and unknown," evidently implying that habit, the usages of society and the moral standards of the individual, have nothing to do with the matter. DR. CARPENTER takes the ground that "some men are born drunkards, some achieve drunkenness, and some have drunkenness thrust upon them."

The estimate of DR. CROTHERS as to heredity can be better appreciated in connection with the context. He says: "The parents and grandparents have been continuous or excessive users of spirits, or have been insane or mentally defective, or have been consumptive, or had rheumatism, gout, or some other profound constitutional disease, before the birth of the child." In view of the frequency of most of these conditions, it may be questioned if a majority of healthy persons could not find instances of one or more of them among the six persons included in two generations of ancestors. At the beginning of this century, probably nearly the whole male population of this country, aside from those whose means enabled them to drink wine habitually, could have been properly described as continuous or excessive users of spirits.

Without questioning the reality of the causes mentioned by DR. CROTHERS, it seems to us that habit and custom count for a good deal more than he is disposed to admit. The overwhelming preponderance of the male sex in the inebriates of this country does not seem easy to explain on his theory. Women are as much exposed as men to most of the influences he mentions; no such difference in favor of one sex is observed in other neuroses, nor in regard to the use of opium, and other stimulants and narcotics, in cases in which social influences do not bear with unequal force upon the sexes. The great rarity of drunkenness among the rural population of Mohammedan countries, and its almost universal prevalence in many savage races, so soon as the opportunity is offered, its varying prevalence in different communities, and in the same community at different times, go to show that the part played by pathological conditions in the beginnings of the alcohol habit is a subordinate one. The same thing is indicated by the ordinary course of inebriety. Although there are not a few instances in which a person who has previously been a total abstainer or a temperate drinker suddenly develops a tendency to get drunk, as a rule the drunkard begins as a moderate drinker, and the habit grows on him, like other habits, until it becomes one of habitual excess.

The question of the curability of drunkenness is of much less importance than its preventibility. A state of public opinion that would make the sale and consumption of alcoholic drinks thoroughly disreputable would do more than anything else to put an end to the evils of intemperance. Many excellent people would consider the remedy worse than the disease.

THE PUBLICATION OF SECTION WORK.

After the recent meeting of the American Medical Association, it was determined to attempt the publication of the work of each Section in consecutive numbers of THE JOURNAL. Fortunately, the committee of arrangements at Washington had prepared the official programme in the order of the original creation of the Sections. This enabled us to take up the work of publication in a proper serial order, beginning with that of Medicine. Up to and including this issue of THE JOURNAL, there have been published the papers read before the Sections on Medicine, Obstetrics and Diseases of Women, Surgery, State Medicine, and nearly all of the Section on Ophthalmology. As rapidly as this publication has taken place, the completed Sections have been republished in reprint form, and a few copies distributed to the members who took part in the proceedings by reading papers. This was done as a recognition of their active interest in the scientific work of the Association. It is much regretted that we were not in each instance placed in possession of the complete discussions which took place in the Sections. This will be provided for at the ensuing meeting. Another regret, and one that we have seriously felt, has been the shortness of type in THE JOURNAL office, which, in a number of instances, prevented our withholding matter for publication until proofs could be returned by authors of papers. To the uninformed about such matters we will say, a printing office should be restocked with type at the beginning of a new volume. Worn type and new type does not work together when mixed.

The method adopted in the serial publication of Section work does not allow us to give a great variety of matter to our readers in each issue of THE JOURNAL, but it does give to each member of the Association and JOURNAL subscriber a singularly valuable post-graduate course of reading. Subjects and departments in medicine are concentrated in a few numbers, and an opportunity is afforded of making a practical recognition of working members. Not only this, but their papers and discussions are rendered doubly valuable by reason of their easy reference. Those who are engaged in specialty practice will most fully appreciate this method of publication of their Section proceedings. Men who aspire to leadership and excellence in scientific researches will find in the Sections of the American Medical Association an arena that is unequaled as a place for the display of their best thoughts and work.

Specialty societies have their place in the professional field, and from them there are sent forth annual exhibits of studies and clinical observations of the greatest value. Thus it is that, semi-annually, the work of the Sections of the American Medical Association, and the great specialty societies reflect the professional conclusions of the most skilful men in our art. In this way the tally is made in professional progress.

PHYSICAL TRAINING REMEDIAL OF PSYCHICAL OBLIQUITIES.

At the Red Hill Reformatory, England, exists an institution, the aim of which is to improve the mentality and moral sense of young offenders by correcting their physical defects, and is known as "the criminal reform athletic school." A recent report makes a claim that 94 per cent. of the cases, retained a reasonable length of time, are recorded as cured. If the gymnastic reformation of the depraved is to be the treatment of the future, it will do away with the necessity of the remarkable suggestion, recently presented in the *Revue Scientifique*, as being the conception of a Californian physician. He proposes that those cases of mental insufficiency that lead to criminality shall have, by legal enactment, to pay the penalty of castration. He does not dwell much upon the direct or deterrent effects of this penal operation upon the criminal himself; the object to be gained is the prevention of transmitted, hereditary defects. In other words, the criminally minded should not be allowed to propagate after their kind. The "moral," or fear inspiring, effect upon that class of scoundrels, who contemplate and deliberately plan the rape of children, the beating of their wives, bigamy, and the misleading of the weaker sex—not to specify other nearly equally repugnant forms of cowardly vice—ought to be very marked. Imprisonment has no fears for many of these wretches who come up time after time for trial regarding repetitions of the same offense. The *Press and Circular*, in an editorial comment, seems to favor the extension of castration as a punishment upon house-breakers, but is not in favor of having the morning papers adopting the term "castration," because the police reports, therein printed, would scarcely be "polite reading for the ladies at the family breakfast table." For example, that journal supposes, if Bill Sykes were to come up for sentence, and the verdict might be "that the prisoner be sentenced to ten years penal servitude and to be immediately castrated. This would not do at all; some new word would have to be found for expressing the latter part of the judgment on the irrepressible gentleman who disturbs our households at night."

"M. D., INDIANAPOLIS."

We note in the JOUR. AM. MED. ASSOCIATION, and in several other medical publications, an article with the above caption, in which it is stated that one S. E. L. SMITH, who was arraigned in Birmingham, England, for assuming the title of "M. D., Indianapolis." SMITH produced in court a document which gave him the said title. It was said the document cost SMITH thirty dollars. We have looked over the list of graduates of the two regular colleges of this city, and are prepared to say that neither of those institutions granted the degree. There are two irregular colleges here, and for them we are not prepared to speak; but the regular schools require four years' study and attendance on three courses of lectures of six months each, with preliminary education in the common school branches. The examinations are rigid, and money cannot purchase favors of these institutions.—*Indiana Med. Jour.*

We take pleasure in endorsing all that the editor of the *Indiana Medical Journal* says of the two regular schools of medicine in Indianapolis. Their character and the integrity of their managers is not questioned. Of the other two the

Illinois State Board of Health reports the diplomas of one recognized conditionally, and the other not recognized. The natural inference is that S. E. L. SMITH had a diploma from one of the latter institutions.

CREDITABLE.

The Illinois State Board of Health last week examined a recent graduate of the University of Berlin. This action is in accordance with the regulations of the Board in not recognizing diplomas from institutions in countries where the diploma does not entitle their holders to practice. This specially obtains in regard to Prussia, where the candidate has to pass the Staats Examen. The result in this instance was highly satisfactory, and creditable to the applicant.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

The Board of Health has for some time been engaged in a thorough investigation of the sources of pollution along the Croton water shed, in consequence of the somewhat unsatisfactory condition of the water, as shown by the analyses made by the chemists of the Board. The two great aqueducts now in use bring to the city a daily supply of about 150,000,000 gallons of water, which comes from Croton Lake, a body of water formed by damming the Croton River a short distance from the point where it flows into the Hudson. The Croton River brings water down into this lake from the hills of Westchester, Putnam and Dutchess counties, and near Croton Falls the river divides into three forks which are known as the East, Middle and West branches. Each of these is fed by numerous streams and brooks, many of them being of considerable size, and many of them having their independent storage reservoirs. The Muscoot River brings the waters of Lake Mahopac down into the Croton River. The East, Middle and West branches have each their great storage reservoirs, the first having the Sodom Dam and Mud River reservoirs, the second the Middle branch reservoir, and the third the Lake Gilead and Lake Gleneida reservoirs. The storage reservoirs of these three main branches of the Croton River are in turn supplied with the waters of a hundred lakes, small rivers and brooks from the north.

It is certainly as perfect a water-shed as can be found anywhere in this country. Its supply by nature is abundant and pure, and its channels for regulated distribution altogether admirable. But the beautiful country from which this grand supply of naturally pure water springs has, like all beautiful countries, become populated. The centers of population there are rapidly growing, and it is from this source that the menace to the health of this great city, which depends on this water-supply, comes. The situation is not particularly grave at present, but it is unquestionably likely to become so in the future unless suitable measures are taken in time; and hence it is that it is imperatively necessary that such legislative action should be taken as will protect the interests of New York in this very important matter. In the meanwhile, the city health department is doing all that it can to ward off threatened evils, and at a recent meeting it adopted resolutions calling upon the State Board of Health to cause to be reported as soon as possible to it the names and residences of all persons ill with a communicable disease who reside on the Croton water-shed, and also to notify it of all deaths occurring on the water-shed, stating in every instance the cause of death and the residence of the deceased.

The chief engineer of the Croton Aqueduct has also made a report in regard to the contamination of the water supply, and the carefulness of statement which characterizes it is worthy of high commendation. In it, however, the fact is plainly recognized that the greatest danger to the quality of the city's water supply arises from the flow into the tributary streams of liquids charged with refuse matters from the most thickly populated portions of the water-shed. As to the contamination of the water in the reservoirs with organic matter, this is held to be a phenomenon of uniform occurrence in all newly flooded reservoirs. However carefully the ground may be cleaned before flooding, there will be vegetation left whose decay will liberate sulphuretted hydrogen, and so be a source of temporary contamination. Exposure to the air rids the water of the noxious gas, and the organic matter which may be held in suspension is not dangerous. On the whole, the quality of New York water is not altogether what it should be, and what it ought to be made by the interference of suitable legislation; but at the present time, at least, there is in it no serious danger to public health.

The Board of Health's summer corps of visiting physicians, reference to whose work was made earlier in the season, has completed its two months' service in the tenement house districts of the city. During this period these physicians visited over 30,000 houses and families, but it is stated that fewer cases of sickness were found than during any previous summer since this service has been established.

The free excursions of the St. John's Guild Floating Hospital have also now been discontinued for the season. This year no less than five trips a week have been made, a greater number than ever before; the boat starting on three days of the week from landings on the East River, and on two days from landings on the Hudson River. The full capacity of the floating hospital is 1,500, but this large number makes it somewhat crowded, and it usually carries from 800 to 1,100 mothers and children. Of course no cases of contagious disease can be taken, and a physician is always stationed at the gang-plank to see that none such are brought on board. The hospital barge is towed by a tug-boat, and as soon as the start is made most of the children are sent to the capa-

cious upper deck, where they run about and get the full benefit of the salt breezes. The trained nurse in charge of this deck has a watchful eye over all, and circulates among the mothers, giving many useful health hints and suggestions as to the proper care of their little ones. To many of the women she says, "I think baby would be better for a nice salt water bath," and the mother and child go below to the bath-rooms. There are five tubs, five spray baths for children, and two spray baths for women, with another trained nurse in charge of them, and many baths are given during every trip. The worst cases are carefully put to bed in two large, airy rooms on the lower deck, and the most of these are left at the seaside hospital of the Guild, where they remain for ten days or so. Besides the physicians and nurses, the working force of the floating hospital consists of a captain, pilot, six deck hands, watchman, engineer, two cooks, and ten waitresses. Two lifeboats are towed behind, in each of which sits a sailor, on the outlook for any child which may fall overboard.

After an invigorating sail down the beautiful bay and through the Narrows, the boat comes to anchor half a mile from the Seaside Hospital on Staten Island, and the patients destined for this institution are rowed ashore. Those remaining on the barge are then taken downstairs and given a bountiful dinner. The milk used for the children is the purest that can be obtained, and it is carefully sterilized and tested before it is put on board. The Seaside Hospital, which is beautifully situated almost at the water's edge, can accommodate over 250 patients, and the arrangement of the beds in its cool and lofty wards is quite novel. From the foot of the iron bedsteads used by the mothers rise two iron supports which curve above the bed like the davits on a ship, and from these a crib is suspended at right angles to the bed. The sick child thus hangs in the air immediately above its mother, and she can attend to its wants instantly, and without rising from her own bed. There are ten acres of land about the hospital, with a fine cedar grove, and with the most abundant facilities for sea bathing. Other institutions which prove of inestimable benefit to the children of the poor are the Summer Home of the Children's Aid Society, the St. George Sanitarium, and the Summer Branch of St. Mary's Free Hospital for Children, all of which are located on the Long Island sea coast.

P. B. P.

KANSAS CITY LETTER.

Vaginal Hysterectomy for Carcinoma—Insanity Following Rectal Operation—Methyl-violet for Cancerous Growths—A New College Organized—College Notes.

The meetings of the Academy of Medicine have of late been unusually interesting. At the last, Dr. J. F. Binnie, Professor of Pathology in the University, discussed the subject of

VAGINAL HYSTERECTOMY FOR CARCINOMA.

He first presented the history of a case successfully operated upon by himself seven months ago, exhibiting the specimen as well as slides showing the cancerous character of the disease, and then gave a table of 1,169 cases gathered from published reports and from private communication of hitherto unpublished operations; these figures gave a mortality of *less than twelve per centum*, the total number of deaths being only 137—in view of which it takes a bold man to say the operation is unjustifiable because of immediate danger. And the ultimate results are no less satisfactory—in fact they are rather surprising inasmuch as a careful study of cases operated upon years ago shows that *more than 50 per cent. of all cases operated upon permanently recover.* This is a somewhat remarkable showing, but it bears out Schauta's estimate of 47 per cent. permanent recovery and places the operation of vaginal hysterectomy far in advance of many procedures generally accepted as justifiable; for example, amputation of the breast for malignant disease, König's statistics giving only 23 per cent. of recoveries in the latter operation. After a thorough analysis of the subject Dr. Binnie formulated these conclusions:

1. Vaginal hysterectomy is a comparatively safe operation.

2. In many cases vaginal hysterectomy effects an absolute cure. Where it does not do so it generally gives relief from distressing symptoms.

3. The more localized the carcinoma, the sooner should total extirpation be done.

4. When it is surmised, but not positively known, that all the disease cannot be removed, the operation ought to be performed.

5. Adhesions in the upper part of the uterus, when there is cancer in the lower, call for at least, an exploratory laparotomy, and if the adhesions prove to be the result of inflammation, hysterectomy may be made.

6. Superficial extension of the disease over the vagina does not absolutely contra-indicate the operation.

7. Clamps, for the control of hæmorrhage, are probably as safe as ligatures, if antiseptic precautions are vigorously attended to; certainly their application is infinitely easier and more rapid.

Dr. George Halley, in discussing the paper, said he had made the operation in eight cases with but two deaths as the immediate result, and though there has been a return of the disease in two cases the recurrence has been in the mesentary and liver, and life has not been so miserable as it would have been with the terrible pains and offensive discharge of primary uterine carcinoma; besides, life has undeniably been prolonged from one to four years. In two of these cases there has been a radical cure; a number of years have elapsed and there has been absolutely no evidence of return; yet careful microscopic examination shows the disease to have been unquestionably cancerous in both cases. Involvement of the vaginal wall does not necessarily contra-indicate operation as in one case the vagina was extensively infiltrated and death would undoubtedly have occurred in a few months, but careful dissection of all affected tissues and vaginal extirpation prolonged the life of the patient almost three years; she died with but little suffering—always thankful for the temporary relief from horrible distress.

INSANITY AFTER RECTAL OPERATION.

Dr. Emory Lanphear lately reported to the Academy

the case of a woman, aged 40, suffering from pyosalpinx, and had hæmorrhoids with fissure; her general condition was bad—the patient nervous and emaciated, and troubled with obstinate constipation and some insomnia. She was put in the hospital for some weeks and improved greatly, the appetite becoming good, sleep excellent, bowels regular and loose, and the strength quite satisfactory—so an operation on the rectum was deemed advisable. Under chloroform, Dr. Lanphear removed the entire lower part of the rectum, with some hard, infiltrated connective tissue surrounding it, pulling healthy mucous membrane down to cover the denuded surface; iodoform was applied freely and the bowel packed with iodoform gauze, bichloride gauze and cotton over outside. She was put to bed without shock and with no subsequent bad symptom, such as pain, rise of temperature, etc. The wound healed by first intention everywhere except at one point where there was pus formation.

On the fifteenth day there was still some pus discharging, and considerable pain at stool, but patient had been gaining at least a pound daily in weight, the temperature was normal, bowels regular, and sleep satisfactory without hypnotics. The next day she became despondent, crying much; the next there was considerable incoherency with the melancholia, but under twenty grains of bromide of sodium she slept nine hours. The next morning she was a perfect picture of dementia; the next she was somewhat excited but passed into a stupid condition soon. The next morning she was apparently unconscious, pulse 60, respiration 16, and temperature normal; she swallowed food (milk and milk punch) and medicine nicely during the day. In the evening she was seen by Prof. J. M. Allen, also; he gave an unfavorable prognosis as he had some years ago a case of insanity following operation for fistula in which there was a fatal termination, with no discoverable cause. The next day witnessed no improvement; she began menstruating in the afternoon, and exhibited some evidence of pain and ovarian tenderness under pressure; temperature 99½° F. On the next day the temperature began to rise, the respiration ran up to 56 per minute and marked emaciation became manifest. The record for the next morning was: temperature 103½° F., pulse 140 and respiration 144 per minute! Of the accuracy of this observation, Dr. Lanphear said there would be no doubt as it was repeatedly verified during the next 30 hours, the patient dying at 2 P.M., of the following day. No autopsy was obtainable.

The probabilities are that the mental disturbance and subsequent cause were due to septic poisoning, but if so the manifestations of septicæmia were of a very peculiar character to say the least. One theory advanced was that the nerve-centers gave way simply from the reflex irritation coupled with the effect of the anæsthetic; in two cases of removal of the uterine appendages reported here some two or three years ago, insanity followed within a few days after operation—and one case has become hopelessly demented. Whether the case here mentioned would have proven an instance of post-operative insanity if the woman had lived is a question for speculation.

ANILINE DYES FOR CANCER.

Methyl-violet, after the method advocated by Moosetig von Moorhof, is being extensively tried in this city for the cure of inoperable malignant growths. One case under the care of Dr. J. W. Perkins of St. Margaret's hospital showed some improvement and marked immunity from pain after each injection; the growth—sarcoma—was most painful, necessitating the hypodermic use of a half grain of morphine every four hours, but the patient was able to go from sixteen to twenty-four hours with no morphine whenever the pyoktanin injections were made.

Other cases under Drs. Fulton, Block, Griffith, Binnie and others at St. Joseph's, All Saints', the German and City Hospitals have shown wonderful results. At the Academy, Dr. J. D. Griffith, Professor of Surgery in the K. C. Medical College, recently reported seven cases in which he had used the drug. Of the seven cases one died, two were (apparently) completely cured—patients exhibited to the Academy—and all the others are improving. Two cases were epithelioma of the face, one epithelioma of the cervix, one osteo-sarcoma of the upper and lower jaw, one adeno-sarcoma of the side of neck and face, the other two were sarcomatous tumors, inoperable. One of the cases presented adeno-sarcoma is 27 years of age, came under treatment some weeks ago, for a very large tumor of the right side of the face and neck; it was of a slow and painful growth, and presented all the symptoms of malignant growths of glands, and examination showed it to be a true adeno-sarcoma, involving the parotid and submaxillary glands. Treatment was begun by injecting twenty minums before and behind, the solution being 1 to 500, carefully sterilized, the face being thoroughly cleansed by antiseptic solutions to prevent the introduction of any material which might cause suppuration. The injections were repeated every other day and rapidly increased in quantity. In two weeks the tissues began to break down; the fluid contents were carefully aspirated and the injections continued, care being taken to throw the solution into the tissues around and not into the cavity in the growth. The tumor rapidly diminished in size as the injections were repeated and the quantity of fluid increased; at last three drachms of the solution were used every second day. There *never* was any pus present, the fluid withdrawn consisting simply of serum, broken down connective tissue, a few leucocytes and many cancer cells; the most careful examination failed to show any staphylococci or streptococci of suppuration. Soon the tumor shrank to almost nothing and now presents no trace of the malignant disease that promised to end his life in a short time.

The other case shown [osteo-sarcoma affecting the molar, superior maxillary and inferior maxillary] was treated in the same way, but with more difficulty, owing to the extreme hardness of the tissues; as only a few drops could be deposited in one place, many punctures had to be made and never could more than sixty minims be injected at one sitting; yet cure is seemingly complete.

In the fatal case, operation had been made some months ago for small epithelioma of the lip. An immense secondary growth sprang up, which, when patient was admitted to the hospital, hung down upon his breast; the parotid gland upon the left side was implicated as were all the glands along the sterno-cleido-mastoid. Upon the lower end of this enormous tumor there was a large ulcer to which some quack had been applying fresh frogs' skins (!) allowing them to remain until the stench would become intolerable. The man was suffering intensely, could not sleep, or eat, and had marked symptoms of septicæmia. But treatment was instituted by the usual injections, only in larger quantities—160 minims being finally used—and painting the ulcer with

the pure stick methyl violet [Merck]. The injections were made near the junction of the cancer with healthy skin as the solution could not be thrown into its body. The odor immediately disappeared, but in a few days the mass began to slough and on the day of death the entire mass dropped off leaving the face perfectly clear and free from cancerous tissue. Had the man not died from exhaustion and septic poisoning he probably would have been cured.

The question naturally arises whether this method of treatment is not, after all, about the same as that of Marsden's paste, the ointment of sorrel, etc., used by "cancer doctors." Instead of being applied externally, it is injected, causing death of the malignant growth without suppuration, simply because it is used hypodermically. The sloughing in Dr. Griffith's last case presents the clinical aspects of cancers treated by means of paste. It is not at all unlikely that pyoktanin has no specific action, and that the same result might be obtained by the injection of a strong infusion of either *oxalidea acetosella* or *rumex acetosa* ["horse-sorrel"], or even of binoxalate of potash or oxalic acid. S.

MISCELLANY.

MEDICAL SOCIETY OF VIRGINIA.—The twenty-second annual session of the Medical Soeiety of Virginia will convene in the hall of the Young Men's Christian Association, in the city of Lynchburg, Va., at 8 P. M., Tuesday, October 6th, 1891, and will continue in session through Wednesday, Thursday, and probably a part of Friday.

On entering the hall each Fellow, Honorary Fellow, Fraternal Delegate and Invited Guest should register his name, postoffice, etc., in the book for that purpose, which will be on one of the desks of the Recording Secretary.

Tuesday night's session will be open to the public. It will be called to order at 8 P. M. by the President, Dr. William W. Parker, of Richmond, Va. After prayer, the address of welcome will be delivered by Dr. H. Gray Latham, of Lynchburg, Va.

The address to the public and profession will then be delivered by Dr. Chas. M. Blackford, of Lynchburg, Va., his subject being "Medical Education as It Was; as It Is; and as It Should Be."

The Committee on Nomination of Applicants for Fellowship will make their report, and at once the vote will be taken on the nominations. Each gentleman, as soon as elected, becomes a Fellow, and is entitled to all the privileges and benefits of the Society.

Such other business of a general character as can be disposed of may then be introduced, including motions or resolutions that have to be referred to committees, reports of officers, announcements, etc.

Ex-President and Honorary Fellow, Hunter McGuire, M.D., LL.D., etc., of Richmond, Va., during the last session, authorized the announcement that he would offer a prize of one hundred dollars for the best original essay on pyelo-nephrites, presented by a Member or Fellow of either of the State Medical Societies of Virginia, West Virginia or North Carolina, of each of which he is an Honorary Fellow. All essays offered in competition must be considered as under the control of the Medical Society of Virginia or its Committee on Publications. The essay to which the prize is awarded will be published in the transactions of the Medical Society of Virginia and in such regular medical journals as may desire it.

The conditions of the competition are that the competing essays must be in the hands of the Recording Secretary of the Medical Society of Virginia by the first day of September, 1891. They must be type-written or printed. Each one must be designated by a motto on MS. (not by the author's name or other mark by which the identity of the author is made known), and accompanied by a sealed envelope, with the adopted motto on the outside, and a card inside, giving the name and post-office address of the author. In advance of the session, the several competing essays are to be examined by a committee appointed by the President of the Medical Society of Virginia. This committee will report the two best essays in their hands, each of which is to be read before the Society, and the prize will be awarded to the one that a ballot vote may determine to be the best.

It is understood that either the Examining Committee or the Society shall have power to determine whether or not either of the essays possesses sufficient merit to entitle the author to the prize.

The following resolution, introduced last year (see Transactions 1890, pages 291–295), requires action during this session:

By Dr. George T. Walker, of Vinton:

Resolved, That the President of the Medical Society of Virginia appoint a committee, consisting of three Fellows, to consider the practicability of designating a time during each annual session, for the holding of clinics, and for clinical instruction, and report at the next annual session.

Committee on above: Drs. Geo. T. Walker, A. C. Palmer and Wm. T. Walker.

Practically bearing on the same subject, Dr. J. N. Upshur of Richmond moved (see Transactions 1890, page 311), that a committee of three Fellows be appointed, to report during the session of 1891, as to the propriety of recommending that a portion of some day of each annual session be set apart for the reports of cases, asking advice, etc.

Committee: Dr. J. N. Upshur, of Richmond; Honorary Fellow Dr. J. L. Ashton, of Dallas, Texas, and Dr. Thomas P. Mathews, of Manchester, Va.

During the session of 1890 (see Transactions 1890, pages 292–295), Dr. Hugh M. Taylor, of Richmond, Va., introduced a resolution to do away with the present system of annually appointing Reporters on Advances in the several departments of medical science, and in lieu thereof select annually some subjects for full investigation and discussion during the succeeding annual session, appointing several Fellows to report on given subdivisions of the subjects, so that the several reports or papers by different authors, when systematically arranged for publication in the Transactions, will practically form one continuous treatise or monograph on each of the several subjects so selected.

After full discussion, on motion by Dr. J. F. Winn, of Richmond, a committee of five Follows was ordered to appointed to take the whole subject under advisement and report during the annual session of 1891.

The President appointed Drs. J. F. Winn and Hugh M. Taylor, of Richmond; I. S. Stone, of Washington, D. C.; Honorary Fellow Dr. Benjamin Blackford, of Staunton, and Dr. John Grammar, of Halifax C. H.

On Wednesday morning, October 7th, at 10 o'clock, the Society will be called to order. Business of a general character will be in order until 11 o'clock, when the President, Dr. William W. Parker, of Richmond, will deliver the annual address of the President.

The subject for general discussion, Acute and Chronic Dysentery, will then be called. The subject will be opened by a paper by the leader, Dr. P. B. Green, of Wytheville, Va. Dr. Wm. J. Crittenden, of Unionville, Va., will follow with a paper having the same title. Honorary Fellow Dr. Bedford Brown, of Alexandria, Va., will follow with a paper on "Dysentery Viewed as a Septic Disease, and Treated by Antiseptics." After this paper, the discussion will be open to Fellows, Delegates and Invited Guests, in the order of their recognition upon the floor by the chair, the right of closing the discussion being accorded to the leader, Dr. Green.

The afternoon meeting will be consumed in the election of officers, including the nomination to the govern-

or of one to fill the place of Dr. T. M. Bowyer (resigned) on the medical examining board of Virginia from the sixth congressional district; the selection of the subject for general discussion during the twenty-third annual session, and the leader in the discussion; the election of a Fellow to deliver the annual address to the public and profession; the selection of place and time for holding the twenty-third annual session, etc.

The meeting at night will be called to order at 8 P.M.

Reports on Advances in the Respective Departments of Medicine and Surgery will be called for in the following order, and continued as the order of business through Thursday, or until completed:

1. *Anatomy and Physiology.*—Dr. Paul B. Barringer, of University of Virginia, reporter.

2. *Chemistry, Pharmacy, Materia Medica and Therapeutics.*—Dr. Benj. Harrison, of Richmond, Va., reporter. In this Section the following papers will be read:

(*a*) The Place of the Turkish Bath in the Treatment of Disease. By invited guest, Dr. Charles H. Shepard, of Brooklyn, N. Y.

(*b*) Pharmacy and Its Practical Relation to the Profession. By Dr. S. J. Baker, of Bedford City, Va.

3. *Obstetrics and Diseases of Women and Children.*—Dr. Herbert M. Nash, of Norfolk, Va., reporter. In this Section the following papers will be read:

(*a*) Puerperal Eclampsia; Its Etiology and Treatment. By Dr. J. T. Graham, of Wytheville, Va.

(*b*) Etiology and Pathology of Puerperal Inflammations, illustrated with specimens. By invited guest, Dr. Thomas A. Ashby, of Baltimore, Md.

(*c*) Retro Displacements of the Uterus. By fraternal delegate from Medico Chirurgical Faculty of Maryland, Dr. H. P. C. Wilson, of Baltimore, Md.

(*d*) Recognition of Operative Cases in Gynæcology by the General Practitioner. By invited guest, Dr. Joseph Hoffman, of Philadelphia.

(*e*) Remarks on Salpingitis and Peritonitis—the Result of Gonorrhœal Infection. By honorary Fellow, Dr. George Tucker Harrison, of New York, N. Y.

4. *Practice of Medicine.*—Dr. Lewis E. Harvie, of Danville, Va., reporter. In this Section the following papers will be read:

(*a*) Importance of the Microscope to the General Practitioner as an Aid to Diagnosis and Correct Medical Treatment, with some Demonstrations in Bacteriology. By fraternal delegate from the Medical Society of Tennessee, Dr. James E. Reeves, of Chattanooga, Tenn.

(*b*) Hæmorrhoids and Their Treatment. By Dr. J. N. Upshur, of Richmond, Va.

(*c*) Symptomatology and Treatment of the Chronic Forms of Nephritis. By Dr. William C. Dabney, of University of Virginia.

5. *Surgery.*—Dr. Thomas M. Bowyer, moved to Sioux Falls, S. Dak., reporter. In this Section the following papers will be read:

(*a*) Present Aspect of Cerebral Surgery. By invited guest, Dr. Landon Carter Gray, of New York, N. Y.

(*b*) Perineal Operations. By invited guest, Dr. Joseph Price, of Philadelphia, Pa.

(*c*) Concussion of the Lungs. By invited guest, Dr. B. A. Watson, of Jersey City, N. J.

(*d*) A Successful Myomectomy for Parasitic Tumor. By Dr. I. S. Stone, of Washington, D. C.

(*e*) A Plea for Closer Study of the Principles of Surgery by the General Practitioner. By Dr. Geo. Ben. Johnston, of Richmond, Va.

(*f*) Some Subject Connected with Orthopœdic Surgery. By invited guest, Dr. A. M. Phelps, of New York, N. Y.

(*g*) Treatment of Goitre by Electrolysis. By Dr. Chas. M. Shields, of Richmond, Va.

6. *Ophthalmology, Otology and Laryngology.*—Dr. J. Herbert Claiborne, Jr., of New York, N. Y., reporter.

[Dr. Claiborne will report on Ophthalmology. Dr. John Dunn, of Richmond, Va., has been appointed by the president, by request, to report on Otology and Laryngology.]

In this Section the following papers will be read:

(*a*) Ophthalmology in Ancient Egypt. By Dr. W. H. Baker, of Lynchburg, Va.

(*b*) Some Personal Observations on Cataract Operations. By invited guest, Dr. A. W. Calhoun, of Atlanta, Ga.

(*c*) Mistaken Impressions about So-called Nasal Catarrh. By Dr. Joseph A. White, of Richmond, Va.

(*d*) Some Suggestions about Cataract Operations. By Dr. Joseph A. White, of Richmond, Va.

7. *Neurology and Psychology.*—Dr. William F. Drewry, of Petersburg, Va., reporter. In this Section the following papers will be read:

(*a*) Hereditary Chorea. By invited guest, Dr. Wharton Sinkler, of Philadelphia, Pa.

8. *Hygiene and Public Health.*—Dr. W. T. Oppenhimer, of Richmond, Va., reporter. In this Section the following papers will be read:

(*a*) The Drink Problem from a Medical Point of View. By invited guest, Dr. T. D. Crothers, of Hartford, Conn.

(*b*) The Drink Problem from a Medical Point of View. By Dr. Frederick Horner, of Marshall, Va.

(*c*) What is to be Done with our Criminal Lunatics? By Dr. J. T. Graham, of Wytheville, Va.

Several gentlemen have indicated their intention to present papers, but do not authorize the Executive Committee to announce the fact. Hence all such papers as may hereafter be prepared will be classified as Voluntary Papers, and will be called for in the order of their presentation after the completion of the above arranged order.

By a resolution adopted in 1884, not more than thirty minutes is allowed to the reading of any paper, whatever may be the length of manuscript, and extempore remarks must not exceed fifteen minutes.

The Medical Examining Board of Virginia will hold a semi-annual meeting in Lynchburg October 6th, 1891, at 8 P.M., preliminary to the examination of candidates (to begin next morning), for license to practice in Virginia. All letters of inquiry about this board should be addressed either to its Secretary, Dr. Paulus A. Irving, of Farmville, Va., or to its President, Dr. Hugh M. Taylor, of Richmond, Va.

The Local Committee of Arrangements, Dr. C. E. Busey, of Lynchburg, Va., Chairman, is using every effort to make this session one of special pleasure and profit to those who may attend.

The Committee on Accommodations, Railroads, etc., Dr. John W. Dillard, Lynchburg, Va., Chairman, reports the following hotel rates:

Norvell-Arlington Hotel, corner of Church and Eighth streets, $2.25 a day.

Lynch Hotel, corner Main and Ninth streets, $2 a day.

National House, Main, between Ninth and Tenth streets, $1.50 a day.

Railroad Rates.—Baltimore & Ohio—Card orders from points in Virginia to Staunton or Lexington at two cents a mile each way. Fellows, Delegates, etc., needing orders over this railroad, to secure tickets, should write at once to the Recording Secretary of the Society.

Chesapeake & Ohio—Round trip tickets from all principal points to Lynchburg or to Charlottesville, four cents a mile. If by way of Charlottesville, add $3 to secure round trip from Charlottesville to Lynchburg and return, ticketing through to Lynchburg.

Richmond, Fredericksburg & Potomac R. R.—From Quantico and intervening depots to Richmond and return, about four cents a mile, round trip, according to "Special Round Trip Excursion Tariff," in effect since February 1st, 1890.

The Norfolk and Western, the South Atlantic and Ohio, the Richmond and Danville, the Lynchburg and Durham, the New York, Philadelphia and Norfolk, the Atlantic Coast Line, the Atlantic and Danville, will

charge five cents a mile, round trip, to connecting points. These rates are, in general, about the usual summer excursion round-trip rates.

The exhibition of surgical instruments, pharmaceutical preparations, etc., promises to be more than usually attractive. Parties wishing space should apply to the Chairman of the Committee on Exhibits, etc., Dr. Frank Camm, of Lynchburg, Va.

The number of applications for Fellowship received indicates that the addition to the membership will be very large. Fellows should induce their eligible friends to forward their applications at once.

Fellows should forward amounts due to the Treasurer, Dr. Richard T. Styll, Hollins, Roanoke county, Va., which is a postoffice money-order office, until October 5th; after that to Lynchburg.

HUNTER MCGUIRE, M.D.,
Chairman Executive Committee, Richmond, Va.
LANDON B. EDWARDS, M.D.,
Recording Secretary, etc., Richmond, Va.

AMERICAN PEDIATRIC SOCIETY.—The third annual meeting of this Society will be held in Washington, September 22, 23, 24 and 25, 1891, at the Arlington Hotel, Vermont Ave. and H St., Parlor 206.

President—T. M. Rotch, M.D., 197 Commonwealth Ave., Boston, Mass. First Vice-President—V. C. Vaughan, M.D., Ann Arbor, Mich. Second Vice-President—Joseph O'Dwyer, M.D., New York City. Treasurer—Charles Warrington Earle, M.D., 535 Washington Bd., Chicago, Ill.

Physicians are cordially invited to be present.

Tuesday, September 22, 8 P.M.

Reading of minutes of last meeting. General business.

1. Address of the President.
2. How to prevent Complications and Sequelæ in Scarlet Fever, J. Lewis Smith, M.D., New York.
3. Discussion on the Diagnosis of Pneumonia in Infancy and Early Childhood.

a. The most diagnostic symptoms of the early stage of lobar pneumonia, and the differential diagnosis from such diseases as Meningitis, Malaria, Scarlet Fever, etc. T. S. Latimer, M.D., Baltimore.

b. The diagnosis of consolidation of the lung from effusion (serous or purulent), and the differential diagnosis between Lobar Pneumonia and Broncho-Pneumonia, F. Forchheimer, M.D., Cincinnati.

c. The diagnosis of Broncho-Pneumonia (acute and chronic), from Tuberculosis, William Osler, M.D., Baltimore.

d. The diagnosis of Broncho-Pneumonia from Bronchitis, also the Temperature Range in Acute Pneumonia, both Broncho and Lobar, L. Emmett Holt, M.D., New York.

e. Remarks by A. Jacobi, M.D., New York, and by W. P. Northrup, M.D., New York.

f. General Discussion.

Wednesday, September 23.

9 A.M. Breakfast with the President at the Arlington.

11 A.M.–2 P.M.:

1. Demonstrations.

a. A Specimen of Congenital Heart Disease, William Osler, M.D., Baltimore.

2. Manifestations of "La Grippe" in Children, Charles Warrington Earle, M.D., Chicago.
3. The Treatment of Laryngeal Diphtheria by Calomel Sublimations, Dillon Brown, M.D., New York.
4. Further Report on Submembranous Local Treatment in Pharyngeal Diphtheria, A. Seibert, M.D., New York.
5. A Case of Ulcerative Catarrhal Dysentery, W. D. Booker, M.D., Baltimore.
6. Stricture of the Œsophagus occurring in Children, with Report of a Case, F. E. Waxham, M.D., Chicago.
7. A Case of Pulmonary Abscess—operation and recovery, with remarks, Francis Huber, M.D., New York.

Thursday, September 24, 9 A.M.–2 P.M.:

1. Demonstrations.

a. Exhibition of Laryngeal Tubes for the Performance of Forcible Respiration, J. O'Dwyer, M.D., New York.

2. A Study of Fifty Cases of Chorea, Samuel S. Adams, M.D., Washington.
3. A Study of 140 Cases of Heart Disease in Children (by invitation), Floyd M. Crandall, M.D., New York.
4. Dysentery in a Boy of 11 years—presence of Amœba Coli, H. Lafleur, M.D., Baltimore.
5. Scorbutus in Children, W. P. Northrup, M.D., New York.
6. Chronic Nephritis in Children, Henry Jackson, M.D., Boston.
7. Two Cases of Acute Primary Nephritis in Infants, L. Emmett Holt, M.D., New York.
8. Scarlatinal Nephritis in Children, J. Lewis Smith, M.D., New York.
9. The Application of Gavage in the Treatment of Uncontrollable Vomiting in Infants (by invitation), Charles G. Kerley, M.D., New York.
10. The Association of Congenital Wry-neck and Facial Herniatrophy, William Osler, M.D., Baltimore.
11. Tubercular Ostitis of the Hip, originating in Colorado, John M. Keating, M.D., Philadelphia.
12. A Case of Slow Heart in an Infant, terminating in Fatal Syncope, A. D. Blackader, M.D., Montreal.

8 P.M. Dinner at the Arlington.

Friday, September 25.

9 A.M. Report of Committee of Council on Nominations for Office and Membership.

12 M. Executive Meeting.

1. The Etiology of Stomatitis Aphthosa, F. Forchheimer, M.D., Cincinnati.
2. Perityphlitis in the Young, J. Henry Fruitnight, M.D., New York.
3. Intussusception, L. Emmett Holt, M.D., New York.
4. A Case of Congenital Cretinism, C. W. Townsend, M.D., Boston.
5. A Further Contribution to Cirrhosis of the Liver in Childhood, with Post-mortem Notes and Microscopic Studies, W. A. Edwards, M.D., San Diego, Cal., and W. M. Gray, Microscopist, Army Medical Museum, Washington, D. C.

The reading of papers will be limited to twenty minutes.

Members expecting to be at the breakfast on September 23, are requested to notify the President (Dr. T. M. Rotch, 197 Commonwealth Ave., Boston) of their intention on or before September 15.

W. D. Booker, M.D., Secretary, 851 Park Ave., Baltimore, Md.

[Members will please take notice that the correct hours for holding the Pediatric Sessions are those stated in this Programme, and not necessarily as may appear in the general programme of the Congress, which will also be sent to them, and which were merely provisional.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from August 29, 1891, to September 11, 1891.

Major Samuel M. Horton, Surgeon U. S. A, is relieved from further duty at Ft. Adams, R. I., and will proceed to San Diego, Cal., and report to the commanding officer for duty at that post.

Capt. L. W. Crampton, Asst. Surgeon U. S. A., is granted leave of absence for fifteen days.

Surgeon David L. Huntington, Surgeon Henry McElderry, Asst. Surgeon Walter Reed, Asst. Surg. Charles M. Gandy, appointed members of a board of medical officers to meet in New York City, October 1, 1891, for examination of candidates for admission into the Medical Corps of the Army.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Two Weeks Ending September 12, 1891.

Surgeon Howard Wells, ordered to special duty in fitting out the new naval hospital at Portsmouth, N. H.

Surgeon Jno. H. Hall, ordered before the Retiring Board, September 19.

Surgeon Jno. W. Ross, ordered, in connection with present duty, member of Board on Labor Employment.